STUDIES IN THE NATURE OF TRUTH

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VOLUME 11

GEORGE P. ADAMS
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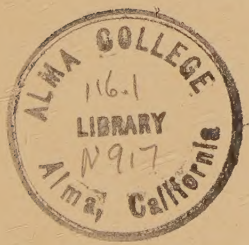
EDITORS

STUDIES IN THE NATURE OF TRUTH

LECTURES DELIVERED
BEFORE THE
PHILOSOPHICAL UNION
UNIVERSITY OF CALIFORNIA
1928–1929



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STUDIES IN THE NATURE OF TRUTH

PREFACE

The present series of papers constitutes a second volume of studies concerning the problem of Truth. It was originally intended that the first of these two volumes should set forth the Problem of Truth as it appeared to the various writers, and that this would be followed by a more constructive presentation of the various theories of Truth in the light of the previous analyses of the problem. This intention has been in principle adhered to, and the present volume is accordingly entitled "Studies in the Nature of Truth." However, the difficulty of making any precise demarcation between the analysis of the problem and the formulation of an answer is as obvious here as elsewhere in philosophical reflection, and none of the essayists have been unmindful of it. It is to be hoped that the reader of either volume will bear this in mind.

THE EDITORS.

September 2, 1929.

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THE PREPOSITIONAL NATURE OF TRUTH

J. LOEWENBERG

THE PREPOSITIONAL NATURE OF TRUTH

J. LOEWENBERG

It was the task of a former essay[1] to look for the habitat of the problem of truth in the composite nature of judgment. I contended that truth is impossible without judgment, and that judgment possesses a fourfold nature, being at once the assertion of a dynamic belief, a thread of formal discourse, the expression of an act or state of awareness, and the description of something real or existential. I then showed that the truth of judgment must mean the truth of all the *four* ingredients constituting it. I then raised the question whether the truth of judgment is the truth of its four ingredients taken separately or jointly, and I argued that either alternative issues in a paradox, leaving us with a sort of Hobson's choice. Either four unassimilable truths or four different ways of assimilating them —this embarrassing choice my former analysis of the problem appeared to force upon us.

The two paradoxes, residing in the fact that the nature of judgment is fourfold, can be easily distinguished. Giving them separate names, we may speak of them as the "distributive" paradox and the "collective" paradox. The "distributive" paradox results from the isolation of the several constituents of judgment; it consists in investing with equal sovereignty the four incommensurable kinds of truth corresponding to the four isolated constituents of judgment. The strange labels which in my previous discussion I ventured to affix to these four kinds of truth—namely, adverbial, substantival, adjectival, and

[1] "The Fourfold Root of Truth," *Univ. Calif. Publ. Philos.*, X:209–241.

hyphenate—may here be avoided, and we may speak instead of pragmatic truth, formal truth, noetic truth, and material truth. These four kinds of truth, independent if the detached elements of judgment to which they correspond are independent, may then be correlated with four distinct tests or norms of truth, i.e., practice, coherence, immediacy, and correspondence. The "distributive" paradox, in short, is the paradox of holding that judgment may be at once true and false: true pragmatically if tested by practice, but false formally if tested by coherence, or true noetically if tested by immediacy, and false materially if tested by correspondence. But if we abandon the catalytic view of judgment and conceive truth as the truth of its amalgamated components, we face the "collective" paradox. That paradox consists in the fact that the integral view of judgment is impossible without one of its components being in a dominating position. The truth of *all* of the elements of judgment can mean nothing else than their truth from the point of view of *each*. Each of the constituents of judgment may annex and control all the others; belief and discourse and awareness and description may exercise dominion over one another, and consequently each of the four tests or norms of truth may legitimately claim that the others are but ancillary to it.

I must here reiterate that it is judgment which is the nerve of truth. There would be no problem of truth, if judgment were not the vehicle of its expression, and if judgment did not undertake to express, through fixed discursive forms, the real nature of things as encountered in action and awareness. Truth thus presupposes judgment, and truth is altogether meaningless until we ascertain what truth is true of. Both paradoxes—the "distributive" and the "collective"—simply disclose the paramount necessity of deciding whether truth is true "atomistically" of four distinct aspects or functions of judgment or whether it is true of them "organically" under the dictatorship of one of judgment's possible differentiae.

So much of my former analysis I must here presuppose. The task now before me is to sketch, in a manner necessarily tenta-

tive, a view of the nature of truth which the fourfold and paradoxical relation between truth and judgment permits us to entertain. What is truth if judgment is the nerve connecting it, separately or jointly, with things as heterogeneous as are practical beliefs, logical propositions, immediate experiences, and existential facts?

The view I wish to defend is the view that truth is multi-prepositional. Like Lincoln's conception of government, the nature of truth can be stated only with the aid of prepositions. Lincoln confined himself to three prepositions: government, he said, must be by the people, of the people, and for the people. For our view of truth we need four prepositions: truth is entertained "by" minds, it is expressed "through" assertions, it is immersed "in" experience, and it is "about" the real nature of things. Apart from these four prepositions truth is a sonorous word signifying nothing; these prepositions simply epitomize the fact that truth requires for its very meaning mention of the multiple relations that define its genesis, its agency, its content, and its goal.

To the different prepositions that enter into the nature of truth we may now give separate names, in order to bring out more clearly the importance of their function. The preposition needed to denote the fact that truth is generated by minds, that it springs from human belief and action, we may entitle *originative*. The preposition required to express the fact that truth must pass through the crucible of propositions, that it must assume the fixed forms of discourse before it can become communicable, we may describe as *vehicular*. The preposition demanded for the fact that truth is continuous with acts or states of awareness, that it hinges upon some element of experience by which belief is induced and verified, we may regard as *pivotal*. And the preposition indicative of the fact that truth is relevant to something real or existential, that its end or purpose is to culminate in a description of the nature of things, we may call *terminal*. These names are introduced, not to violate the principle of "Occam's Razor," but to exhibit conveniently

the network of prepositional relations in which truth is inevitably enmeshed.

These prepositions—the originative, the vehicular, the pivotal, and the terminal—enable us to recognize the fact that truth is related to different levels or spheres of reference. The reference of truth has always been regarded, and justly so, as the most crucial aspect of the problem of truth. If, according to a certain tradition, truth is but a relation inherent in judgment, what precisely is that relation, and what the relatum? Is the relation immanent or is it transcendent? And is the relatum logical or is it real? These questions furnish the basis for the hackneyed dichotomy between formal truth and material truth. Formal truth, so it is conventionally held, is the result of a relation immanent in judgment, the relatum being a system of "pure" propositions, implicative of one another, and enjoying complete independence of the minds that judge and the things they judge about. Material truth, on the other hand, is assumed to be relevant to facts and events transcending discourse: here the relation is transitive and the object real. And once this neat dichotomy is established, the ensuing problem becomes a matter of mediating between the two systems of relations in which any concrete judgment is entangled, between the system of internal or formal relations and the system of external or material relations. All this simplifies beyond recognition the actual problem of truth. We cannot rest satisfied with the traditional notion of truth as bi-referential, involving but two prepositions, namely, that truth must be expressed "through" formal propositions and that it must be "about" a material order of facts or events. We cannot omit from consideration the referential import of the other two and equally indispensable prepositions: truth must be entertained "by" minds capable of belief and it must be grounded "in" states or acts of awareness. Truth is not bi-referential but quadri-referential.

It will be shown later why it is so important to emphasize the equal value of the four types of prepositions that connect truth with four different levels of reference. Meanwhile, we

must see more clearly the difference in referential function performed by these four prepositions. The preposition entailed in the assertion that truth must be entertained "by" minds—the preposition referring to the source of truth—can be ignored only by a process of violent abstraction in the interest of a preconceived theory. Truth and error are in the first instance attached to beliefs, and beliefs originate in the mind or in the body-mind of a certain species driven to enact them under the pressure of needs and wants necessary to its survival and behavior. It is only by a *tour de force* that truth can be regarded as having no reference to the psychological and biological conditions underlying its genesis and growth. I do not here raise the question whether beliefs are true *because* or *despite* the specifically human or animal conditions under which they are entertained and enacted. I am here concerned with a question far more fundamental, i.e., whether the *source* of truth itself can be rendered intelligible without reference to conditions that have their locus in the human or animal psyche. And I assert that it cannot, and for a very simple reason. There is one belief, implied in every other belief, so indispensable that its ultimate warrant can be none other than biological. It is the belief in the validity of the *distinction* between truth and its opposite. To cast doubt on the validity of this distinction is to kill the goose that lays the golden eggs. Nothing specific could ever be true or false, however relatively or variably so, without the prior belief that between the nature of truth and the nature of error there is an irreducible difference. Only by assuming this universal belief as unassailable can I deduce or justify particular beliefs. Whence its validity? For this belief, blindly assumed in the very endeavor to assail it, for only in accordance with it can the assault be made, there seems but one justification that can hold water. It has to do with what Mr. Santayana has felicitously called our "animal faith." Being the animals we are, our lives simply could not be lived without faith in the unassailable distinction between the true and the false. Such faith is indispensable; it is so because we cannot discard it and

continue to live and prosper as human animals. The appeal to what is indispensable—a favorite appeal in philosophy—is usually made with great solemnity, as if thereby we were invoking the highest sanction for our beliefs. I can see in this appeal nothing more than the evocation of a surd. Arguments based upon the principle of indispensableness are in the last analysis anthropomorphic. The indispensable is what *we*, the human animals, cannot dispense with. Just as we cannot cast off our skins, so likewise are we unable to sweep away the distinction between the true and the false. The "originative" preposition, then, refers to a vital propensity of the human mind to believe in the absolute validity of an inalienable contrast; and in this belief lies the generic source of truth. Truth is thus impossible unless there are minds to entertain it. It can be entertained "by" them only if an irreducible contrast between the true and the false is first posited. And the indubitable belief in the validity of this contrast, indubitable because doubt already presupposes it, can be found nowhere else than in the necessity for life and for action. The first reference of truth is simply biological.

But truth is not only entertained "by" minds, requiring for biological reason an absolute distinction between truth and its opposite, truth is also expressed "through" formal propositions. A second preposition thus links truth with a different level of reference. Truth and error are indeed attachable only to human beliefs, but such beliefs remain ineffable and incommunicable until affirmed or denied through the fixed forms of discourse. The fixed forms of discourse, mathematical or rhetorical, have a constitution of their own, which constitution is commonly called "logical," and our beliefs are *demonstrably* true only when that constitution is the vehicle through which they are conveyed. Beliefs must borrow from discourse its pervasive rules and forms to achieve articulate truth; these rules and forms, however, cannot themselves be called true without producing confusion. The conception of abstract or formal truth, divorced from belief and experience (where experience means

both the acts of experiencing and the facts or events experienced), is certainly illusory. How can formal truth be separated from belief, seeing that the validity of the distinction between truth and its opposite can be justified only by an act of faith? How can abstract discourse be detached from a prior belief in the validity of the rules of procedure by which it is produced and developed? All discourse presupposes for its foundation two distinct beliefs for which only pragmatic grounds can be proffered, the primary belief that between truth and error there is an indefeasible difference, and the secondary belief that certain rules of procedure are binding and coercive. And just as discourse rests on belief, so likewise does it lean on experience in the double sense of that ambiguous word. For discoursing is itself experiencing. The acts of thinking and reasoning, by which pure discourse is fashioned and sustained, are obviously experiential acts. And can it be admitted that discourse is objectless? Who is foolish enough to say that discourse is about nothing? It is of course possible to assert that pure discourse (such as logic or mathematics) is not about any particular existence, if "particular" means what is experienced here and now, and if "existence" has to be qualified as physical or empirical. But when "particular" means determinate and "existence" is qualified as non-physical or non-empirical, or when it is not qualified at all, coinciding simply with the notion of "being," then discourse, however pure, is certainly about particular and real objects. Abstract terms and relations, which are the objects of pure discourse, are determinate forms of being; they are particular in the sense of being distinguishable from one another, and they enjoy the sort of reality which is at least psychological or logical. There is no such thing, then, as pure discourse, if by its purity we mean its radical insulation from all belief and from all experience. Consequently, formal truth, conceived as something self-contained and self-sufficient, is pure fiction. Truth in fact is not formal at all; formal are the vehicles through which truth is translated and communicated. Such vehicles, the various modes and fashions of dis-

course, possess the same rigid fixity and the same internal affinity as do the rules and conventions of grammar. But just as grammar is the structure of empty shells apart from the minds that use it and the ideas which it serves to express, so pure logic, being nothing but grammar glorified, is a system of vacant frames wrenched from its connection with human belief and human experience. To identify logic with truth is like confusing grammar with speech or anatomy with life. What is true is not logic but human belief and human experience raised "through" logic to the level of articulate expression. By means of the "vehicular" preposition truth thus refers to a framework of logical forms to which it must conform to be capable of fixation and transmission. We may call the second reference of truth logico-discursive.

Truth, however, is not merely generated "by" belief and expressed "through" logic, it requires another preposition to indicate its relation to that which induces belief and which verifies or nullifies it. What induces or occasions belief is, of course, experience, and experience, too, is what confirms or confutes it. Truth is thus always immersed "in" the flux of experience, following its tortuous course, and ebbing and flowing with its changing tides. Here is a third preposition, showing how the truth of our beliefs hinges upon some deliverance or disclosure of the various acts or states of our awareness. For this reason, this preposition may not inaptly be designated as "pivotal," since what fosters or frustrates the truth of our beliefs is some crucial turning point in the career of experience. But experience, as already noted, is a treacherous word, comprehending within its sweep at least two separate notions, namely, *that* we experience and *what* we experience. The fact of experiencing is obviously not the same as the fact experienced: the former signifies an act or state of being aware, the latter, the object or content of awareness. These two aspects of experience—the fact of being aware and the fact of which I am aware—constitute two distinct levels of reference with which truth is connected, distinguishable by two different prepositions.

Truth is "about" the experienced object but it persists only "in" the experiencing of it. The injunction not to look for truth "outside" awareness must be taken literally. Outside awareness is the real inciting it; truth, however, resides not in the real but in the knowing of it. The full statement of truth, to be considered later, requiring mention of all the prepositions relevant to it, is a four-dimensional affair, of which reference to experience or awareness or knowledge represents but one dimension. Truth is that which is entertained "by" credulous minds, "through" formal utterances, "about" real facts or events, as encountered "in" the sundry modes of awareness. But the last reference, the reference to awareness, is inexpungible. Awareness is central. From it radiate all beliefs. From that source their springs are fed. For only at the behest of awareness do beliefs arise, and only by repeated or fresh inundations of it do they gain in strength and scope. Once I have discarded "the possibility of experience," once I have eliminated awareness as one of the primary conditions of such possibility, and belief is like a stagnant pool. I can believe, for instance, that the earth is flat or round, or that men are neither angels nor demons, only after becoming aware, through perceiving or imagining or thinking, of the objects of my belief; and, likewise, I can proceed to act on this belief, and through action verify or impugn it, if through awareness I am able to anticipate, and later to identify, the specific consequences which the belief in question entails. The reference of truth to awareness, obvious and undeniable, must be distinguished by a special name. What the "pivotal" preposition establishes may thus be called the cognitive or noetic reference.

The last preposition that concerns truth has already been mentioned. Though engendered "by" belief and expressed "through" discourse and imbedded "in" awareness, truth is always "about" something. And by that something, when conceived as possessing a constitution of its own, a constitution not derivable from the conditions of belief, the forms of discourse, the processes of awareness, we mean something "real." The

"real" must be assumed to enjoy in its own right an independent and covert nature if truth is to have something to discover or to uncover; otherwise truth is but a name for sundry processes—functional, formal, noetic—drifting in the void. If truth is to have some aim and resting place it must be conceived as terminable in a "substantial" object, substantial in the sense of being self-existent, and self-existent in the sense of being definable in its own inalienable terms and not in those that merely describe its relations to human faith, human logic, and human experience. Extending the notion of anthropomorphism to cover whatever on the human scene is necessarily drawn to the human scale, we must regard the three references of truth already discerned as references to levels essentially anthropomorphic. The prepositional relations, designated as originative, vehicular, and pivotal, relate truth to the human ways of believing, discoursing, and experiencing. Of such ways other than human we can obviously form no conception. But if truth is to terminate in something real, and real because non-human or over-human, its object must be envisaged as transcending the confines "by" which and "through" which and "in" which truth operates. Such an object, by contrast with the anthropomorphic ways directed toward it, we may characterize as "cosmomorphic." Truth, then, claims to be true "about" a real or non-anthropomorphic object. This last preposition, which I call "terminal," contains in compendious fashion two aspects of the same reference. The demand that truth terminate in what it is true "about" must be understood as referring at once to an *object* and an *objective*. For truth has both. Its object is indeed something cosmomorphic, i.e., something whose qualities and processes are its own secret, as it were, distinguishable from the terms by and through and in which we envelop it under the pressure of human haste and presumption, and discoverable (if discoverable at all) by removing the anthropomorphic obstructions—the *idola mentis*—that hide it from our purview. But the objective of truth—the end for the sake of which it is pursued—is to uncover the inner nature of such

an object and to reproduce in terms of human intelligence its indigenous characters and operations. In other words, truth attains its objective if and when it gives, in F. H. Bradley's words, "a character to reality in which it can rest."[2] Adopting the distinction made familiar by the author just quoted, but with the qualifications rendered necessary by my own terminology, I should define the object of truth as a cosmocentric *that* and the objective of truth as a cosmomorphic *what*. The object about which truth aims to be true is something self-existent, to be envisaged as possessing a center of its own, from which emanates whatever is able to touch and kindle our faith and our experience; but the objective of truth is to qualify by description the intrinsic content of the self-existent, and to bring about harmony between predicates taken as ultimate by human intelligence and the attributes belonging to the independently real. I shall have occasion to return to this distinction later. Meantime, I have said enough to suggest what the "terminal" preposition may be said to refer to; it is a reference describable as substantial or material.

And now the question inevitably arises whether these four levels of reference, indicated by the four types of prepositions, are of equal importance for the nature of truth. That they are equally important, in the sense of being equally requisite for the possibility of truth, is indeed the theme of this essay. For to ignore or to eliminate any of these prepositional references is to maintain that truth is possible either without fructifying beliefs or without forms of expression or without sustaining experiences or without substantial things. A serious fallacy, from which competing theories of truth may be seen to suffer, is involved in the failure to accord equal recognition to the prepositions "by" which, "through" which, "in" which, and "about" which truth lives and moves. This fallacy I venture to name the *Fallacy of the Suppressed Prepositions*. This fallacy is committed whenever only one of the prepositions required for the possibility of truth is singled out as primary

[2] *Appearance and Reality*, 165.

or self-sufficient. It matters little whether the primacy or self-sufficiency of the favored preposition involves the exclusion of the others or the inclusion of them as subordinate aspects, in either case the others are suppressed by being ignored or by being minimized. We have such suppression whenever truth is wholly identified with or merely deduced from either its genesis or its procedure or its experience or its object. It is this fallacy of the suppressed prepositions which vitiates the theories of truth associated with pragmatism, rationalism, mysticism, and certain versions of realism. It is necessary to cast a glance (and a mere glance must here suffice) at these competing theories.[3]

The genetic theory of truth, with which pragmatism is chiefly identified, is distinguished for its insistence that the primary reference of truth is to the context of the vital needs and interests of individuals, needs and interests inducing action and those beliefs precipitated by action as well as those subsequently guiding and controlling action. Is pragmatism subject to the "dominance of the foreground"?[4] Much may be said about the partiality for the "foreground" on the part of pragmatism. There is no doubt that the dominance of the foreground throws light on many features of pragmatic doctrine, viz., that truth is forward-looking, in the sense that its progressive verification is always reserved for the future; or that truth is experimental, in the sense that the consequences by which alone it can be judged are unpredictable; or that truth is relative, in the sense that the standard to which it eventually must conform—namely, success or satisfaction—varies from mind to mind and differs with changing circumstances. But

[3] The reader of my essay on "The Fourfold Root of Truth" will recognize the analogy in mode of treatment between my former and my present analysis of the problem of truth. In my former discussion emphasis was laid upon the paradoxes that result either from the separation of the four constituents of judgment or from their amalgamation. The same paradoxes (though here not specifically so mentioned) are involved in theories of truth guilty of what I here call the *fallacy of the suppressed prepositions.*

[4] See "Dewey's Naturalistic Metaphysics," by George Santayana, *The Journal of Philosophy,* XXII:680 ff.

the dominance of the foreground, which explains these and cognate tenets, must itself be understood in the light of a greater dominance, the dominance of the background. It is the genetic background of truth which renders intelligible the pragmatist's preoccupation with the foreground. According to pragmatism, truth is a function of beliefs that start and terminate in action. Beliefs are at once the descendants and the progenitors of action. But obviously beliefs cannot culminate in action unless it is action which first engenders them. The reference of truth is thus primarily to what originates it, and secondarily only to what it generates. That truth has its origin in practical needs or active beliefs (i.e., beliefs produced through the exigencies of action)—this is the doctrinal thread that runs through all the varieties of pragmatism. This does not mean, if I understand pragmatism aright, that all needs are *now* practical. Though no needs could be satisfied without action, needs are at present operative, transformed through the development of intelligence, which are relatively non-practical, such as religious, aesthetic, moral, scientific, metaphysical. But in the *beginning* was only practical action. This quasi-Faustian formula is the formula of pragmatism. It is in terms of this formula that all prepositional elements of truth may receive their justification. Beliefs, which arise only in consequence of action, are what truth must be entertained "by." Logical forms and logical structures, "through" which beliefs are fixed and translated, are distinctions within the process of intelligence—always creative and always experimental—spurred to activity under the pressure of practical demands. Knowing or experiencing, "in" which truth flows and "boils over," what is it but a species of acting rooted in processes originally non-cognitive? And what of the real? That "about" which truth is true may be defined quite neutrally as some critical or crucial situation to which one kind of active response spells success and another frustration. All the prepositional references may thus be accounted for. But the pragmatic theory of truth, dominated as it is by the genetic background, is after all one of the instances involving

the fallacy of the suppressed prepositions: the vehicular, pivotal, and terminal prepositions are indeed neither denied nor ignored —in this pragmatism is superior to any other theory—but they are simply assimilated with or subsumed under one preferential preposition. While the "originative" preposition is undeniably autonomous, while truth is impossible unless generated by the beliefs our practical needs render exigent, the other prepositions cannot without violence be reduced to a state of vassalage. They too can vindicate their title to hegemony.

Consider what rationalism does with the vehicular preposition. Because truth, if and when expressed, needs logical propositions "through" which its expression may be achieved, it is assumed that logical forms and structures have an unconditional claim to be recognized as valid and an unconditional right to exercise undisputed control over all beliefs and experiences as well as over all their contents and objects. Prima facie the assumption is monstrous. A vehicle is but a vehicle. It is not the road it traverses; neither is it what it contains nor the destination to which its freight is borne. To be sure, if, to begin with, all I have is one unalterable kind of conveyance, and travel I must, then everything pertaining to the journey, including the journey itself, must be accommodated to it. I must construct my road in accordance with the size and contours of my carriage, I must put into it whatever it is capable of holding, and I must go wherever by its frame and speed it can lead me. It will not take me to the moon nor to the bowels of the earth. This analogy, if a bit far-fetched, is nevertheless no caricature. Rationalism is putting its cart before everything. Without taking note of the tortuous highway of truth (which is human belief), or of the heterogeneous load of truth (which is human experience), or of the remote objective of truth (which is the independently real), rationalism maintains that its logical chariot —elegant, impeccable, a priori—is itself the truth. And this in either of two senses. It is either the truth in complete isolation from all belief and from all experience and from all objects, in which case it is called "abstract" or "formal" truth. The

spotless chariot simply moves in the void, unfreighted and self-directed. Or it is the truth inclusive of all forms of cognition and the structure of its subject matter, in the sense that whatever we know and whatever is real must partake of the nature of logical discourse, and then it is called "concrete" or "objective" truth. In this case, the logical forms and structures, the media through which truth is conveyed, are assumed to be identical with the forms and structures of real things, whether believed or disbelieved, whether known or unknown. In other words, "abstract" truth is concerned with the a priori forms of thought considered without reference to reality; "concrete" truth, once we postulate the identity or harmony of thought and reality, simply means that the intrinsically real is what is consistently or coherently or systematically thought (i.e., thought in accordance with the rules and procedure of logical discourse) to be believed and experienced *faute de mieux.*

It is obvious that, in the case of formal truth, we have a most flagrant instance of the fallacy of the suppressed prepositions: the originative, pivotal, and terminal prepositions are deliberately and completely ignored; we have here an arbitrary withdrawal from individual beliefs and the flux of experience and existential things, levels in reference to which alone truth can properly function. No less flagrantly, though less obviously, is the same fallacy committed by the sort of rationalism for which "thought" and "being" are identical or continuous. The "originative" preposition is here suppressed by denial of its relevancy: the genetic conditions underlying our actual beliefs are extruded from logic and epistemology and are relegated to psychology and biology. The "pivotal" preposition is suppressed by attenuation: the realm of experience in which alone truth can be sustained is regarded as important only when fluid experience is distilled into timeless thought, the eternal habitat of universal categories and principles. And the "terminal" preposition is suppressed by supersession: the real about which truth is true is so equated or so correlated with the discursive forms and conceptual structures through which it is

reproduced that (to allude to Spinoza) the "order of things" and the "order of ideas" form but one and the same order.[5]

The overweening accent on the "vehicular" preposition is thus the distinguishing mark of rationalism. Since the *expression* of truth is possible only "through" the processes and forms of ratiocination, these processes and forms are taken by rationalism to constitute truth itself, the other elements requisite for it being either evacuated or absorbed. Just as in pragmatism we encounter the dominance of the genetic background, so here, in rationalism, we face the dominance of immaculate forms and structures. And if, to speak in metaphors, the road of truth is active belief and its vehicle pure logic, the deep-seated antagonism between pragmatism and rationalism is only too natural. For the one, truth is an open road. It stretches and winds in all directions from cradle to the tomb. Individuals and races must traverse it in such conveyances as the exigencies of practical life constrain them to evolve. On their way—and they are always en route—they encounter surprising experiences and situations, and these strain every nerve of their "creative intelligence" in the endeavor to extract from them the fullest possible enjoyment and satisfaction. For the other, truth is a closed carriage, perfect in form and structure, everlastingly preserving its exquisite finish and design. It either does not move at all, since it already contains the logical conditions of time and space and motion as parts of the system of entities—eternally subsisting and internally related—with which truth is identified. Of, if it does move, its motion is one of self-expansion and self-enlargement, in the process of which it brings within its vast inclosure all that is experienceable and all that exists. Between pragmatism and rationalism—metaphors aside—the difference cannot be composed, because one refers truth to the actual conditions of its origin and enactment, the other merely to its logomorphic constitution. Both references are valid, since the possibility of truth depends equally upon them; but when either is taken as preeminent, exclusive or inclusive

[5] Cf. Spinoza: *ordo idearum idem est ac ordo rerum.* Ethics II, Prop. 7.

of the other, we have the fallacy of suppression already mentioned.

Of the same fallacy those are guilty who exalt above all the others the "pivotal" preposition, on the ground that without being experienced or known, grasped or attained, truth would never be recognized as such, and could thus not be distinguished from error. When the reference to experience or awareness is taken in an absolute or radical sense, the doctrine that results is the mystic one; for it is mysticism, religious as well as secular, which with constant iteration has held that "to be true" and "to be experienced" mean the same thing. There is a fatuous way of making this speciously tenable. When experience is dialectically emptied of all reference to anything else, when it becomes a synonym for pure and immediate awareness, its truth consists in the sheer fact of its occurring. "To be true" and "to be experienced" mean then the same thing, simply because every instance of experience, being uniquely what it is, and admitting of no comparison with any other, contains the quality of "trueness" as something indelible. If I am in the habit of seeing ghosts, who can deny the fact of my seeing them? I call this view fatuous because, in proclaiming the trueness of all awareness considered merely as such, it makes nonsense of the notion of truth. Truth is intelligible only as correlative to falsehood. Now if all awareness is true, no awareness can be false, and if no awareness can be false, by the same token no awareness can in any significant sense be called true. To call something true by nullifying the distinction between the true and the false is a case of throwing the baby out with the bath. With such fatuity mysticism cannot be charged. Truth for the mystic is identical with a certain kind or quality of experience contrasted with which every other kind or quality must be deemed false. From ordinary immediatism mysticism is distinguished by its evocation of an exceptional experience which is to serve as the *standard* of truth. That rare and preternatural experience, concentrated in a moment of supreme ecstasy, difficult to attain or to recover after its loss, the reward of the most

intense and strenuous self-discipline—this is the lyrical focus of mystic truth. But the great moment of rapture—the objective of the mystic's fervent longing—does not merely possess trueness, if by trueness be meant an ineradicable quality of all experience when dialectically dissevered from what experience is about. The unique experience characterized by the mystic as "true" contains in some mysterious fashion within its instantaneous embrace all that is worthy of being called "real." The mystic experience is the miraculous assignation of all truth and all reality. Hence its ineffable character. The distinctions requisite for the dialectical analysis of truth are overcome and transcended in the amorphous intuition which the mystic claims to be attainable by his type of beatific consciousness. That reality is pure unity, the negation of all distinction, whether of sense or of thought, and ultimately fusing with the rapturous vision of it—this at any rate is the constant refrain of speculative mysticism.

The fallacy of the suppressed prepositions committed by mysticism is too patent to require emphasis. The "pivotal" preposition is here so strained and magnified that all the others either disappear altogether or unaccountably coalesce with it. The "originative" preposition disappears, since it is not "by" active beliefs, capable of growing or withering, that mystic truth is attained; truth is found *totum simul* in an instant intuition needing no other warrant than its own indubitable presence. The "vehicular" preposition disappears; being avowedly amorphous, identified as it is with the sudden flash of passionate insight, mystic truth defies the logical forms and structures "through" which we may essay in vain to utter it. The "terminal" preposition disappears, since the real in which mystic awareness culminates is none other than this mysterious awareness itself. The reference that remains is just the one reference to this preternatural awareness. And if some shadow of meaning is here to be attached to the terminal reference, all we can say is that the illumination in which mystic truth consists somehow contains in indivisible fusion that which it is supposed to

illuminate. The fallacy of suppression inherent in the mystic view of truth thus involves either radical rejection of all prepositions other than the pivotal or their miraculous coalescence with the pivotal. All this is rendered necessary by taking as unconditional the demand that only "in" experience is truth to be found. Conditionally the demand is valid. Experience, whether ordinary or mystic, is of course not the same as truth; there is, however, no truth without experience, since in experiencing alone—in sensing or perceiving, in remembering or thinking, in judging or inferring—is truth created or discovered, established or discredited. It is in this sense that all experience is pivotal. Or (to speak pictorially once more) while the road of truth is belief, and its vehicle is discourse, its filling is experience.[6] It is the perennial merit of mysticism to have recognized that truth is empty unless laden with experience. But its defect lies in leaving truth roadless, formless, and objectless. Its truth coincides in the end with the impalpable burden of a momentary vision.

We have still another form of the fallacy of suppression in the view which identifies truth solely with its destination. Because truth must be held to terminate in what it is true "about," it is forthwith assumed that "to be true" and "to be real" are synonymous and convertible expressions. Here the fallacy takes the form of magnifying out of all proportion the "terminal" preposition, and in the end truth vanishes altogether, being replaced by its object or content, by things existential or by entities subsistential. This fallacy is present in certain forms of realism, and notably in that form represented by Mr. Wm. P. Montague.

Mr. Montague detects but two meanings that can be given to the word "truth." By truth may be meant, he says, "(1) whatever is believed, or (2) whatever is real or is a fact."[7] The

[6] The reader will note and forgive the seeming deviation from the previous metaphor of experience as a flux or stream. It may still be said that, if truth travels on the road of belief in the vehicles supplied by logic, its filling or content is what the "course" of experience furnishes.

[7] *The Ways of Knowing or The Methods of Philosophy* (London, 1925), 165.

relativity of truth as proclaimed by pragmatism owes, so avers Mr. Montague, "some of its plausibility to an ambiguity."[8] When the duplicity of meaning is revealed the relativity of truth becomes either a "truism" or a "paradox." For if truth means "whatever is believed," then it is quite obvious that truth is inseparable from the minds engaged in believing and is consequently relative to them; but if truth stands for "whatever is real or is a fact," then relativity results in the anomalous assertion that "the facts or realities of the world change as people's minds change."[9] The force of Mr. Montague's criticism lies in rejecting the first and in holding to the second meaning of truth. True and false, as he says, "are terms applied to judgments and beliefs only in a borrowed sense, not for what they are in themselves, but in virtue of the objects to which they are directed."[10] The nominal definition of truth, "regardless of any epistemological theory," should then be stated thus: "the word 'true' in its primary sense means the same as the word 'real.'"[11] This definition "transforms the problem of truth into the problem of reality";[12] and the way is thus open for the fusion (or confusion) of truth and reality in the inverse order in which the same fusion (or confusion) is accomplished by mysticism. Whereas in mysticism reality is identified with truth and truth with a beatific vision, in the realism defended by Mr. Montague truth is identified with reality and reality with the order of actual existence framed, as it were, within the wider structure of subsistence logically continuous with it. But with Mr. Montague's metaphysical theory, either in itself or in relation to his theory of knowledge, I am here not concerned. I am merely interested in showing that his view of truth, like the views already considered, suffers from the fallacy of the suppressed prepositions.

The suppression in question can be stated very briefly. It takes the form of reducing to secondary importance every consideration not compatible with the primary equation of the true

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[8] *Ibid.*, 166. [9] *Ibid.*, 165. [10] *Ibid.*, 338. [11] *Ibid.*, 399.

[12] "Truth Subsistential and Existential," *Univ. Calif. Publ. Philos.*, X:248.

with the real. With the origin of our beliefs the "true" can have as little to do as has the "real" in which it is merged. The objective nature of that which is true (= real) is on the premises of realism independent of any one's belief about it. It is the *object* of belief which is primarily true and not the belief; consequently, the sole origin of truth lies in the intrinsic nature of the object. Equally secondary is discourse, if discourse is simply a name for the modes and forms through which truth is asserted. For of the two parts or aspects distinguished by Mr. Montague as constituting the nature of judgment—the "judgment-utterance" (the act of asserting) and the "judgment-content" (the thing that is asserted or judged)—it is to the latter that the adjective "true" primarily applies and not to the former, and if to the former, the application can be justified only, not because of anything in its intrinsic nature, but "only and entirely" because of "what" it asserts.[13] And the same relation obtains between truth and experience. In so far as experience means *experiencing,* the true (= the real), in accordance with the cardinal principle of realism, is independent of it, in the same way in which it is independent of the acts of believing and asserting. But in so far as experience means the *experienced,* then the true *is* the experienced, since, according to Mr. Montague's realism, "all experienced objects have an independent meaning or essence that gives them a status of *possible* physical existence,"[14] the word "possible" being introduced to mark the difference between the "existential" and the "subsistential," a difference which is here irrelevant, seeing that the possible or the subsistential is in its own sphere real or true. The true being the same as the real, it follows quite consistently that truth in a secondary sense (as applying to our beliefs, our assertions, and our experiences) derives its sole significance from what it is true "about." The "terminal" preposition thus stands vindicated as regards its claim to hegemony; the destination of truth predetermines its route, its vehicle, and its load.

[13] *Ibid.,* 247.

[14] *The Ways of Knowing or The Methods of Philosophy,* 292.

While truth is certainly meaningless *without* a destination—and in making this central lies the chief merit of realism—the identification of truth *with* its destination begs the whole question at issue. For what *specifically* is the goal of truth? How can it be assumed without a prior belief in our ability to distinguish between the real and the unreal (or between the true and the false)? How can the nature of this goal be determined without a prior justification of the validity of those discursive ways by which alone we can determine it? And how can it be found or discovered without a prior defense of the competency of our experience either to reveal or to invade it? Ay, there's the rub! Without recognizing the priority of these questions it is idle to convert the true into the real. The feat accomplished is merely verbal.

I have taken pains to emphasize the fallacy of the suppressed prepositions, present in competing theories of truth, for two reasons. In the first place, the fallacy so universally committed is an indirect proof of the indispensable character of the four prepositional references. For in the equal possibility of distending or subjugating each in turn lies the guaranty that these prepositional references are equally insuppressible. As in the case of Kant's antinomies, the different modes of suppression rest on antithetical arguments each as cogent as the other. The fallacy of suppression—if a parenthical remark be here not amiss—is not a fallacy of formal logic—a "logical illusion"—due to want of attention or ignorance. It is rather a sort of "transcendental illusion" as unpreventable and incorrigible as are "empirical illusions." The *illusion of reduction,* to give it a label, is general and widespread. Witness the various attempts of reducing mind to matter or matter to mind, ideas to things or things to ideas, logic to psychology or psychology to logic. Transcendental I call this illusion (in conformity with Kant's use of the term) simply because it is a natural and unavoidable propensity of human reason. The four modes of "reducing" truth—to dynamic beliefs, to logical discourse, to immediate experience, to the independently real—afford a striking illus-

tration of this transcendental illusion. But the game of reduction, being a universal game, can be played in behalf of different elements. The element supposedly vanquished in one context raises its triumphant head in another. What is suppressed here, exercises suppression there. But the illusion of reduction is a long story and here only indirectly relevant. My second reason for giving such prominence to the fallacy of suppression is more important. The fallacy or illusion of suppressing what is insuppressible shows the futility of ignoring the formidable complexity of truth and of resting satisfied with a definition of it drawn from only one or some, but not from all, of its levels of reference. To this fundamental point, however, the remainder of the essay must be devoted.

The concept of truth is indeed complex in being logically composite, i.e., in the sense of needing for its analysis a set of different terms and relations. I have endeavored elsewhere[15] to exhibit its logical complexity by linking truth to judgment, and by showing judgment to be composed of four distinct elements, each of which furnishes its quota to the notion of truth. But the complexity of truth is not merely logical. Truth is a name for actual and multifarious transactions occurring in concrete contexts between finite minds and substantial things. By means of judgment we continually establish dynamic relations with various levels which *de facto* precede judgment. These levels —human belief, human discourse, human experience, and non-human or over-human reality—are antecedently "going concerns," being as such prior to the appearance of truth. We may, if we choose, attribute truth to judgment, provided judgment is understood to be a mere echo or offshoot of these "going concerns." Consider the conditions underlying the possibility of judgment. Before judgment is possible animal minds must exist to voice through it their active beliefs, a logical grammar must be extant by whose rules and conventions it is bound, the stream of experience must run its course in which alone it can endure, and the real must enjoy a substantial nature with which

[15] "The Fourfold Root of Truth," *loc. cit.*

it is ultimately concerned. All these conditions as "going concerns" are anterior to judgment and hence to truth; and if this is so, the statement that truth is a character possessed by judgment must be taken *cum grano salis.* Though functioning by means of judgment truth is in transitive commerce with the complex conditions conditioning judgment. Taking for granted the *logical* relation of truth to judgment I prefer to make central the *actual* relation of truth to the levels that precede judgment by designating truth as "quadri-referential." Truth literally refers to four distinct "worlds" already flourishing as such from which judgment is but an abstraction—the world of beliefs, the world of discourse, the world of experience, and the world of things. Anything more actually complex than truth can hardly be hit upon. If Hegel is right in representing philosophy as the owl of Minerva, the symbol for truth, being the ripest fruit of philosophy, is the hind of Diana. It comes when "the sun is laid to sleep." The nature of truth demands the prior and incessant interaction of the endlessly mobile and expanding worlds between which it is the consummate and mediating relation.

It is thus manifest that no verbal definition of truth can be hazarded without doing injury to its complexity or without falling a prey to the illusion of "reduction." If nevertheless I venture to describe truth as "quadri-prepositional," I do so by innuendo, as it were, intimating the necessity of avoiding the fallacy of suppression. Direct and positive definitions of truth are fraught with danger. If I could be certain of circumventing the danger inhering in any formal and cryptic definition, I might be tempted to define truth as follows. Truth is a response conceived as final by means of perpetually changing belief and discourse to the nature of things as encountered in awareness. The primary sense of truth (to borrow Mr. Dewey's word) is "consummatory." The characters and operations of the real are the "problems" of which truth must be viewed as the consummate "solution." These "problems" make their appearance in awareness or experience and their "solution" is

achieved (if achieved at all) in systems of efficacious beliefs and in systems of harmonious propositions, any and all such systems remaining problematic in the absence of an experienced guaranty that between the "problems" and their "solution" there is an actual "correspondence." Truth is thus continuous with reality in the same sense in which a solution is continuous with its problem. But continuity is not identity. There must always remain an indelible distinction between the problem and its solution if any sense is to be attached to either, for even a solved problem is a problem still, certain questions being always open concerning it, i.e., whether the solution is provisional or final, if final by what standard it is to be so judged, and on what ground the coerciveness of the chosen standard is to be justified. But however impossible it may be to divest any solution of problematicalness, truth means in the first instance a solution envisaged as completed in the face of the problems which reality engenders in human experience. The difference between truth and judgment is now apparent. Judgment, too, is a responsive belief and assertion induced by the experienced real. But whereas judgment is an inchoate response, abstractly distinguishable from its truth, since error or frustration may be its ultimate doom, its truth must be conceived to lie in its ideal end or consummation, necessitating multilateral relations between an indefinite variety of such responsive acts and assertions. In other words, judgment is the complex unit of response, truth is the ideally expanded and final system of such units—the interrelated order of beliefs and propositions—functioning as the consummate solution of the problematically experienced real.

Because truth has to be conceived primarily and ideally as "consummatory," secondarily and actually it must be considered as "experimental." Belief and discourse, required to set truth in motion and to give it expression, are transitive processes whose basis is the problematically experienced real and whose goal is to remove from the real its problematic character. How can the problematic character of the real be removed save by

continual experimentations in which belief succeeds belief and in which one logical description transplants another? From the point of view of the ideal objective of truth, which is to exorcise the problematic from the real by laying bare its intrinsic nature, all our dynamic beliefs and all the conceptual formulations of them are nothing but experiments or hypotheses in the direction of that objective. For the *relative* verification of them there are indeed competing tests. We test the validity of our beliefs by the successful consequences they are prophetic of, and we test the validity of our logical assertions by their systematic coherence or consistency. Between these tests (as shown in a former discussion[16]) there is no ultimate competition. Coherence cannot be confined to logical propositions; it applies to whatever is capable of cohering, to practical beliefs as well as to sundry states or acts of awareness. Conversely, on nothing else than practical belief can the assurance rest that more coherence is "truer" than less coherence. But however rigorously these tests be applied they are no warrant for the belief that through them the objective of truth can be attained. Of the most successfully enacted beliefs and of the most coherent systems of thought nothing more can be said than that they are felicitous experiments to be replaced perhaps by experiments more felicitous still. To be more than experiments, happy for the nonce, they must be assumed, not merely to approximate the objective of truth, but to *terminate* in that objective. And for such an assumption there is no ground whatever. To be sure, the mystics confidently make the claim that by the test of rapturous immediacy the goal of truth may be attained, such goal consisting in the removal of the problematic from the real. Unfortunately, in removing the problematic from the real, the mystics banish the real itself, since the real is indistinguishable from the ecstatic experience of it. One other traditional mode is left of turning experimental into consummatory truth, without surrendering the distinction between truth and reality, and that mode is by correspondence. Our systems of beliefs and

[16] "The Fourfold Root of Truth," *loc. cit.*

propositions, though initially experimental, may be regarded as the consummate responses to the problematically real *if* and *when* they are in correspondence with the intrinsically real. What prevents us from saying that in the discovery of such correspondence lies the ultimate end of truth? Only this. Genuine correspondence must be experienced as such, and if experienced (assuming it to be experienceable), whence the assurance that experienced correspondence is the same as actual correspondence? Correspondence as an object of experience does not enjoy a privileged status. The question whether "to be experienced" means the same as "to be real" admits of no exception. If the objective of truth lies in establishing some correspondence between our beliefs and propositions and the inner nature of things, it is always pertinent to challenge *specific* beliefs and propositions as regards their claim to correspondence. Obviously this claim cannot be supported by correspondence itself; it involves ulterior beliefs and propositions founded on other tests. In a word, correspondence is a postulate and not a fact. Beliefs and propositions *must* agree with what is intrinsically real. This is all we can say. Whether any particular systems and propositions actually fulfil this requirement is always doubtful, to be settled by those precarious tests to which all our experimental endeavors must in the end submit. While consummatory truth is a regulative ideal, necessary to give aim and direction to *possible* judgments, all our *actual* judgments are crucial hypotheses or experiments, accepted or rejected in the light of tests quite alien to correspondence, tests that have to do either with human satisfaction or with logical consistency or with immediate awareness.

This situation is forced upon us in our attempt not to impair the prepositional complexity of truth. The avoidance of the fallacy of suppression leads necessarily to a discrepancy between truth "consummatory" and truth "experimental." From the equal recognition of the four prepositions required for the possibility of truth follows the corollary that the objective of truth is unattainable. For that which truth is "about"—the indepen-

dently or intrinsically real—can be distinguished but not separated from the dynamic beliefs "by" which it is engendered, from the forms of logic "through" which it is asserted, and from the flux of experience "in" which it is engulfed. The sinuous interplay of the four types of prepositional references lends to truth a nature which can have no conceivable similitude to the cosmomorphic nature of its object. The exhibition of the cosmomorphic nature of the real is indeed the consummate objective of truth, but it cannot attain this objective without assimilating to its own nature the nature of its object. And since the nature of the real cannot be disengaged from the nature of human belief, from the nature of human discourse, and from the nature of human experience, the objective of truth is in the predicament of an unrealizable ideal. But here we must return to the distinction, already adumbrated, between the object of truth and its objective. While the objective of truth is "ideal," in the sense that no correspondence can ever be consummated between the prepositional nature of truth and the intrinsic nature of realty, its object is preeminently "real," in the sense of being the antecedently existing substantive to which all experimental truth is directed. Truth, then, has an ideal objective and a real object, and since the two cannot be made to coincide, since the intrinsic nature of the real ceases to be intrinsic when forced into alien grooves—the grooves of human belief and discourse and experience—truth is a sort of Wandering Jew moving for ever in search of an abiding city. I am here reminded of a simile still more drastic made famous by Hegel. But Hegel's likeness of truth to a "bacchanalian revel" is too violent, suggesting as it does the presence in every experimental truth of a toxic condition required for the salubrity of consummatory truth, of truth as a "whole" or as a "concrete universal." This presupposes, however, what is here challenged, the possibility of attaining the objective of truth by a dialectical symphony of human incongruities. More apposite is the figure of the chameleon. Because truth has a real object, namely, the cosmocentrically existent, and because truth has an ideal objec-

tive, namely, to reproduce "by" belief and "through" discourse and "in" experience the cosmomorphic nature of the self-existent, such reproductions are ineluctably changeable and variegated. The story of human civilization, what is it but a succession of changing beliefs, a pageant of multifarious systems of thought, a medley of endemic acts or states of experience? To all these chameleon-like responses to the intrinsically real belongs a measure of validity, if validity is tested not by correspondence but by pragmatic success, by logical coherence, by mystic insight; and one response is "truer" than another when shown to be either more workable or more consistent or more passionately felt. But that to any one response or to all in synthesis belongs "consummate" validity, a validity resting on actual correspondence with the indigenous nature of the object of truth, is a pathetic fallacy. The object of truth—the intrinsically or cosmocentrically real—is always with us, but the objective of truth—the disclosure of its inner or cosmomorphic nature—is a remote and inaccessible ideal.

If I am asked to give a name to the general philosophical view with which the theory of truth as quadri-prepositional is consonant, the label I suggest is "Problematic Realism." With all forms of realism I share the conviction that reality is prior to mind and hence to knowledge and to truth. But for various reasons—and among others for reasons involved in the very nature of truth—I hold that reality is a recondite substance qualifiable by human knowledge as problematic, *if* the qualification is to be considered final. In the absence of the demonstration that the "order of things" is the same as the "order of ideas," in the absence of the assurance that the inner nature of reality "about" which we seek truth is constituted by the manner in which we are obliged to seek it—by the beliefs we are coerced to hold, by the forms of discourse we are constrained to use, and by the ways of experience we are compelled to suffer and to enjoy—I must perforce be satisfied with the only adjective meriting the appellation of finality—the adjective problematic. I have argued on different occasions and from various

points of view for what I here call "Problematic Realism."[17] To these arguments I beg leave to refer my friendly reader. Only one concluding remark I venture here to indulge in. It is a confession. I am moved by the same desire as appears to animate most philosophers, namely, the desire for the absolute. The description of reality as problematic is not a denial of the absolute. It is rather an affirmation of it. I am impelled to qualify the real as problematic—problematic, that is, from the standpoint of human knowledge—simply because I want an absolute term by which to characterize it, and the term problematic is the only term I can regard as absolute, consistent with what I find to be "given" and what I find to be inferable from the "given." I should be glad to replace it by a more positive term if I could honestly do so. I should be glad to renounce Problematic Realism if I could be convinced that in any of the emulous metaphysical generalizations the objective of truth is victoriously attained. Meanwhile, the concept of the problematic is not wholly negative. It involves the recognition that, though no system of human thought can coincide with the ideal objective of truth, no system of human thought is without relation to the real object of truth. Every system of human thought is from its own point of view a significant response to that object. While lacking in "consummate" validity, every response has a fighting chance as a fruitful hypothesis or experiment. As regards experimental truth Problematic Realism joins forces with Pragmatism. But the further relation between these two philosophical positions is quite another matter.

[17] A summary of my general position is contained in the work, soon to be published, under the editorship of Professor J. H. Muirhead, on *Contemporary American Philosophy.*

TRUTHS OF EXISTENCE AND OF MEANING

BY

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TRUTHS OF EXISTENCE AND OF MEANING

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Any reflection upon the meaning and nature of truth, any attempt to construe a theory of knowledge, is confronted by an initial paradox. We set out to know what knowing and what knowledge are. We endeavor to make true assertions about truth. Now, in every other instance where we try to understand the nature of anything, we stand off from it, survey it from without, and gradually close in upon it from a variety of different approaches. The object of our study is not, at the outset, within our grasp. The knowledge which we aim to possess is absent till comprehension and understanding arrive, if they ever do. If now we regard the aim to know what knowledge is as on all fours with the aim to know what, say, the stars are, we shall have to say that until we discover the nature of knowledge, we stand outside of knowledge. Our reflection and inquiry, our observation of knowledge ought then to be as external to and as independent of knowledge, as our telescopes are with respect to the stars. Eyes and telescopes do not imply stars, and they are not made of stars. But our assertions about truth should themselves be true, and every step in our perceiving and reflecting upon knowledge implies and is compacted of that which we aim eventually to obtain, namely knowledge. Yet, if the knowledge of knowledge is like the knowledge of anything else, we ought not to use and to possess knowledge till the consummation of our quest. It is as if, in order to build a telescope, we had already to possess that vision of the stars which only the completed telescope can provide. Were this the case, it is clear that we could never build telescopes. Yet the analogous and no less

paradoxical belief that we have to possess knowledge before we can acquire it was certainly held by Plato, and it bears witness, I believe, to an inescapable truth of the knowledge situation and problem. It is, as I hope to make evident, one aspect of this paradox which will enter into the subsequent discussion.

Suppose it should turn out to be the case that knowledge and truth are elusive and—in the words of one of the titles of the present series of papers—inaccessible. The paradox is even greater. I can well picture the possibility of contriving a trap to ensnare an animal and forever failing to catch it. The procedure becomes a bit complicated—as we have just now noted—when the process of trap-building presupposes that you have already caught your beast. But what are we to say if, in order to make the trap we must not only already have caught our animal, but also that the trap is of a kind which by its very nature is precluded from catching any prey whatever. If truth is inaccessible, it becomes a pious but forlorn hope that the statements made in support of that thesis shall themselves be true. I should be content if I could deal with the lesser paradox, that which is involved in the search for knowledge about knowledge itself, and in the admission that propositions concerning truth should themselves be true.

I begin with what might seem to be the least controversial statement that can be made about knowledge, the statement namely that knowledge is concerned with and is about that which in some sense exists and has existence. Whoever possesses knowledge, apprehends, grasps, portrays, images, represents, conceives, is confronted with, is compresent with, some situation, fact, relation, or entity which is just what it is and just what it is known as being. This would appear to be the minimum statement which could be made of any knowledge situation, if and when there is knowledge. This minimum statement commits us to no assertion that knowledge, the cognitive confronting of existence and a knower, is ever attainable, except indeed such knowledge as is conveyed by this assertion itself. It commits us to no special account of the mechanism which may be

supposed to render knowledge possible, if it is possible. Nor does it restrict in any fashion the kind or domain of existence—if there be a variety of such domains—with which knowledge is concerned. If I know that the product of $x + y$ and $x - y$ is $x^2 - y^2$, that light travels with a velocity of 299,796 kilometers per second, that Keats wrote Endymion, that envy corrodes the soul—if I or anyone indeed know these things or any things whatever, then it is something somehow existing with which I have cognitive dealings. Did nothing whatever exist, and could this be known, then the one existing object of knowledge would be the fact that nothing exists. If any such situation be barely conceivable, then of course the kind of existence which such a fact must have (in order to be known) will be quite different from the kind of existence which this fact denies, and perhaps different too from the kind of existence which belongs to the knowledge of this fact. Existence of some sort, and in some dimension, is ineluctably correlative with knowledge. This possession of existence, or this just being an existence of some kind, on the part of anything whatever which is the object of knowledge, lies at the root of the deep-seated conviction that the object of knowledge is and must be independent of its being known. Without this characteristic of "independence," knowledge is meaningless and impossible. For to say of anything that it is independent of any knowledge of it, is just another way of saying that it has existence. If the ascription of an independent status to the object of knowledge goes beyond the ascription of existence, as it frequently does, it may easily prove to be ambiguous or positively misleading.

We are, I think, placing emphasis here upon what Mr. Loewenberg designated as the 'terminal' aspect and preposition of the knowledge situation. Existence is that which knowledge is *about*. Our human interest in knowledge and in the problem of its nature and possibility, bears witness to the most perdurable metaphysical bent of our nature, the desire to discover and to know that which has the maximum of existence, that which really exists. This marks indeed the goal of knowledge. It is

'terminal' and consummatory in a pregnant sense. For this reason it has, I think, a rightful ascendancy, the due recognition of which should not lay one open to the charge of the "fallacy of suppression" or "reduction." When the goal of your journey is indeed of surpassing importance, it matters relatively little what the conveyance is, or with what else it may chance to be freighted, and where it may have originated, or how rough the road may be, provided you do reach your terminus. Some vehicle and some road upon which it may travel are indeed indispensable and in this sense it were idle to suppress them. But the rôle which they play is subordinate, when measured against the significance and urgency of the terminus to which they are believed to lead. It is for the sake of that which exists that the arduous and tortuous journey of knowledge-seeking, of science and philosophy, is entered upon, and if the journey prove longer than we anticipated when, with light heart, we climbed upon our vehicle, even if every supposed terminus prove to be but a station en route, and we become so absorbed in the passing scenery as to forget our destination, nevertheless, the *raison d'être* of our journey is inevitably the goal. Yet, intriguing as is this metaphor, which I borrow from Mr. Loewenberg, it has, like all metaphors, its dangers, and we must now relinquish it, as we set forth upon our journey.

There is, it would seem, a necessary corollary to the statement that knowledge is ineluctably and supremely concerned with, or that it is about, existence. We are not, I may remind you, saying anything as yet as to the possibility or impossibility of obtaining knowledge, or of knowledge reaching its object or goal, which is existence. We are concerned with the concept of knowledge, with its nature, with what it would be, did it anywhere exist. To say that knowledge is directed upon and is about existence, appears to imply that knowledge is the possession of a being who, as knower, is a sheer spectator of the existences which are known. I say "appears to imply" because we shall find before we are finished that this assumption will require revision, and that knowledge is never such a confronting of sheer

existence by a purely contemplative and finding mind. But for the moment I shall depict a knower as if he were a bare spectator of existence. As such, it might appear that he must be careful not to intrude into his knowledge anything that does not come from the side of the existence to be known. Above all, he must be careful to exclude all that arises from his own nature, his own life and experience, his own hopes and interests. His business, as knower, is just to register existence. The medium in which such registering occurs ought to be diaphanous, with no thickness and life of its own, without bias, flaw, or perspective. This may, alas, be only an ideal of what knowledge should be, only remotely attainable by our minds harnessed as they are to animal bodies. But whether or not attainable by us, or to what extent, how deeply has this ideal of what knowledge really is when it is indeed knowledge, entered into the historical structures of philosophic thought about the nature of knowledge!

But no less clear is it that beings such as we are, are compelled to assume an attitude toward the things surrounding us, very different from that of contemplative gazing upon existence. We have wants and needs which impel us to do something to the objects in our world, to enjoy and to destroy, to escape dangers, to discriminate between friend and foe, to make, control, and exploit what exists so as to transform it to our own uses. All this implies that we are not disinterested spectators and knowers, but creatures with vital needs and impulses, compelled to take sides, to choose and select, to pronounce things good and bad, or better and worse. So imperious are these vital and practical exigences of our animal and human existence, that everything which transpires in our experience appears of necessity to be caught up by and subservient to the life and the needs of our bodies, our minds, or our body-minds. Where in all this living matrix of the wants and interests belonging to us, which are indeed just ourselves, can a place be found for any sheer neutral registering of existence, undistorted by the vital and human medium in which of necessity such registration of existence must occur? It is small wonder that the attempt should

be deliberately and frankly made completely to redefine knowledge in terms of our doing and living, trying and venturing, succeeding and failing, and wholly to relinquish any notion of knowledge as the faithful disclosure and registration of extra-human existence. Yet even if it be granted that all which calls itself knowledge is a plan of action, utilized in the service of some vital and practical need and demand of our nature, such an admission does not expunge the deeply metaphysical and realistic impulse to discover and disclose that which exists. It may condemn the realization of such an impulse and desire to perpetual and pathetic frustration. It ought not, I think, impel us to allege, in the manner of the fable of the sour grapes, that we have no desire for a sheer knowledge of existence regardless of what are our vital and practical interests. The interest in knowledge is the interest not in ourselves but in existence.

The interests which are other than cognitive and theoretic are diverse and multiform. Utilitarian and economic, moral and social, aesthetic and religious, is there any trait shared in common by all such non-theoretic interests, in terms of which they all fall within a common genus? Is there any one category germane to all these non-cognitive interests, as the category of existence is correlative with and pertinent to knowledge? I think that there is. What this common characteristic is becomes evident when we observe that it is never the bare existence of things and situations which elicits our non-theoretic interest. Not, at any rate, such objective existence as is the correlate and the goal of knowledge. It is rather, the import and use, the value and significance which things have for us, that comprise the domain of our non-cognitive interests. A hungry creature searches for that which is good for eating. He can of course satisfy his hunger only with food which really exists, as a physical thing. But it is not its existence as contemplated and known impassively, but its use to him as food, its value, with which he is vitally concerned. And so it is with all of the varied non-cognitive interests. With each of these there is correlated some species of use, value, or significance. And I

propose that we sweep all of these objectives or termini of our non-cognitive interests into the one category of meaning. I propose to use "meaning" as the generic term for the kind of thing with which all of our experience, attitudes, and interests other than theoretic and cognitive, have to do. Desiring and avoiding, selecting and using, loving and hating, admiring and enjoying, striving and purposing—all these are attitudes and interests which are surely different from the interest in just knowing things, in contemplating and recording existences, in merely letting "facts" announce and register themselves. Just as existence is the objective and correlate of cognition so meaning is the objective and correlate of our practical and vital, our aesthetic and moral, and all other non-theoretic concerns.

But clearly, we need here to tread cautiously. We have distinguished meaning and existence. Existence is what we are bent upon when we seek just to know. Some sort of meaning it is—and meaning includes use or value—which concerns us when we do anything or everything except knowing. But do not meanings themselves exist? Some kind of existence they must assuredly have, else how could we talk about them, raise queries concerning them and inquire as to how they are related to existence? Indeed do we not try to know just what values and meanings are, that is, contemplate them as existences? And when we try thus to know them for what they are, as we do in the theory of value or the theory of meaning, they apparently cease to be definable in terms of a category which is contrasted with existence, and they become existences of some specific kind. What becomes then of our initial bifurcation between what things are, what things exist as being, and what they mean? I shall not consider these perplexing questions in this place. I merely note that this subsumption of meaning under existence occurs only under the influence of the cognitive intent and may thus appear to verify our original statement that existence, and existence alone, is the correlate of knowledge. The meanings and values which things appear to wear are there only for some vital, practical, or aesthetic interest. Such meanings seem per-

force to evaporate or to be transmuted into sheer neutral existence once we succeed in knowing them. And only if and when we are guided by some non-cognitive interest are we confronted with meanings and values. We might put it paradoxically and say that did nothing exist except existences, the only thing we could do would be just to know them. It is because meanings and values also exist or appear to exist, that there is grist for our vital, affective, emotional, practical, and purposive activities. We shall indeed before long have to face the question whether existences as sheer and detached from meaning and value could even be known. But the force and pathos of this question lies in the prior seeming necessity of divorcing existence and meaning. That divorce seems decreed by the inexpungable distinction between the ideal and aim of knowledge and that of the mass of our vital, practical, non-cognitive interests.

This bifurcation of knowledge directed upon sheer existence and all the non-cognitive modes of experience and of interest which are implicated with meanings, is a characteristic achievement and deposit of the impetus given to modern philosophy by the scientific revolution of the seventeenth century. Prior to that—if we neglect the possible foreshadowings of modern science in Greek atomism—there was no such clean-cut demarcation. Indeed, the outstanding trait of the classical Greek tradition in philosophy is the mutual interpenetration of that which is believed to exist, to be real, and that which is endowed with meaning, value, and significance. This tradition viewed human experience and human interests as integral to the total cosmic scene; that which was fraught with deepest significance within the boundaries of man's experience was at the same time taken as disclosing the framework of reality. Human use and want, man's needs and ideals, his purposes, the very grammar which lay imbedded within his discourse, the reason or Logos inherent in his thinking, this was all linked continuously with that which was most deeply and really existent in the nature of things. The interpretation of nature, within this tradition, was teleological. The course and destiny of natural processes were

thought to be intelligible only in so far as they disclosed a pattern of purpose or meaning. The idea of the Good, of a significant order of things and of events, was not to be abstracted from in any inquiry as to what nature or reality really is. The motions of the heavenly bodies, the downward fall of terrestrial bodies no less than the growth and behavior of living things, obeyed the compulsion of purposes, meanings, and of final causes. All such natural processes were indeed the realization of ends; they were not simply observable occurrences to be described for what they were and in their own terms. Existence itself was permeated with meanings. Existence was but the scaffold or the husk behind which were the ideas, the meanings, the intelligible forms and final causes, whose apprehension was the goal of the lover of true knowledge.

Such inseparability and fusion (if not confusion) of existence and meaning is, it might appear, the witness of an inability to determine where the meanings germane to human life and experience, human reason and discourse terminate, and where the bare existence of nature and reality begins. The world of significant human meanings overflows into the realm of objective existence. It is something like this which is meant, I suppose, when it is said that the cosmology and metaphysics of this tradition were essentially, if unwittingly, humanistic and anthropomorphic. It is this tradition which persists in the scholastic doctrine that the order of existence coincides necessarily with the scale of perfection and of value. The ontological proof for the existence of God may perhaps be viewed as the logical culmination of this long tradition. So indispensable is the maximum of existence to the maximum of meaning and perfection that a non-existing *ens perfectissimum* is a sheer contradiction. And it is still something derived from this same tradition, transplanted into a different intellectual horizon, which moves within the structure of modern philosophical rationalism.

The scientific revolution of the seventeenth century accustomed men's minds to the thought of an external reality notably

different from that which was portrayed in the classical Greek tradition. Instead of a reality which was all of a piece with the meanings and values which rendered human experience significant, men now believed themselves confronted by a causally and mechanically determined system of physical objects and events. This quantitative realm of metrical and primary motions was all that in truth really existed. The wealth of significant qualities, the meanings and forms which were woven into the very texture of existence in the older tradition, were now excluded from objective reality. Instead of aiming at an understanding of the meaning which really belonged to things, the new science seeks solely to describe how the observable occurrences in nature go on. Not *why* bodies fall, not the grasping of that which a falling body realizes, the potentiality which it makes actual, the form and end which it achieves, but the simple *how* of the existent occurrences themselves becomes the objective of scientific study. Meanings, like purposes and values, no longer lie within the realm of objective existence. They are of necessity expunged from that realm. Their association with and their dependence upon mind becomes far more pronounced than it ever was in the Greek tradition. Instead of being found by mind when it contemplates and truly knows reality, they are the creatures of mind, additions and fabrications adventitiously imputed to an existence to which they are wholly dissimilar and strange.

There is, however, be it noted in passing, an extraordinary paradox which dogs the steps of the advancing theoretic conquest of nature in the modern scientific movement. Men set out to discover the independent, significantly neutral existence of the physical order. They seek to strip away from that order all secondary qualities (which are human meanings adventitious and eccentric to sheer existence), the tertiary aspects of value, of beauty, and of purposive, final causes. But the more this vast enterprise succeeds, the more do the existence and the nature thus disclosed coalesce with a structure which appears to have the very maximum of logical and theoretic significance, the

structure of mathematical truths and theorems, one which seems to be most completely independent of observation of fact and registering of sheer existence. Descartes' belief that matter, physical existence, is a *res extensa*, bears witness to the hold which the mathematical ideal had on his thought. For extendedness, spatiality, is the proper domain of geometrical forms and relations, rendered capable of algebraic development and deduction through the powerful instrument of analytical geometry. Here in this most highly developed region of knowledge, the existence of matter fuses with the meaning which mathematical symbols possess in a deductive and rational system. This insight of Descartes is deeply prophetic, I suspect, of the entire development of modern physics. We set out originally to know sheer existence, we were distrustful of meanings, of secondary qualities, of all that the mind's own creativeness imputed to existence. We discover, in the end, that the only existence with which physical science is concerned is well on the way to being transmuted into a system of symbols and meanings. It is, as Mr. Eddington calls it, a "shadow land," when measured against the solid, existential substance which we originally set out to know. If we still crave substance and existence, must we not shove them beyond the threshold which frames the farthest reaches of scientific knowledge?

Yet this paradox—that the physical sciences set out to capture sheer existence and return from the chase with little or nothing save mathematical symbols and meanings—need not, perhaps, vitiate the legitimacy of the quest. And to all this it may well be retorted that if physics has become mathematics, and geometry mechanics, it means merely that the knowledge of mathematical existence (or subsistence) has replaced or has come in part to overlap the knowledge of physical existence. However, I think that it is perhaps either a foolish philosopher or a very very wise one who will venture today to say anything about the implications for philosophy of the present state—or flux—of the physical sciences, and I should prefer not to be forced into either one of these two categories.

We have been speaking thus far of knowledge with existence as its objective or correlate, and of non-cognitive interests whose correlate is some species of meaning. As yet, nothing has been said about truth. And I think it is right that knowledge should be surveyed before truth if, as we have done, knowledge be viewed as directly concerned with existence. For, the relation between truth and existence is not so direct. It is not existence which is true, but knowledge of existence. Knowledge is the mediating link between truth and existence. There is a reflexive character about truth which appears to be lacking in knowledge. Truth supervenes upon knowledge or the claim to knowledge. It is the recognition, the certifying that knowledge is indeed knowledge. It is the result of passing judgment upon, of reviewing and appraising the claim which knowledge makes to apprehend existence. It presupposes that some or much or even all of what passes for knowledge is not really knowledge, just as legal judicial procedures, issuing in judgment, presuppose the possibility that some men who claim to be innocent and who pass as such, are really not innocent. There can be no erroneous knowledge any more than there can be an innocent man who is guilty. But a man can be judged guilty who claimed to be innocent, and who passed as innocent. Likewise, knowledge may appear to exist, yet really not exist. Truth denotes the tribunal before which knowledge is summoned, to determine whether or no, or in what degree, it really is knowledge.

The designation of judgment as the locus of truth thus indicates its reflexive and, with respect to knowledge, subordinate character. I have, or claim to have, knowledge of the shining sun and fleecy clouds as, in some sense, really existing. So far, all that is in evidence is knowledge—ideas, beliefs, perceptions—on my part, and on the side of my world, existence. It is only when and if this knowledge is challenged, when it is accused or indicted of not really being knowledge, or barely suspected of making a spurious claim, that I am called upon to plead before the tribunal of truth. The verdict is a judgment, judgment in a crucial sense, "It is true or it is false *that* the sun is

shining." Knowledge is concerned ineluctably with existence; truth is a judgment directly focussed upon knowledge, and consequently, but only indirectly, upon existence, through the medium of knowledge. We might say that while knowledge is a dyadic relation between a knower and some known existence, truth involves a triadic relation, adding to these two terms a third, something which, still to follow the analogy, plays the part of a judge or tribunal to pass judgment upon the validity of the presumed knowledge. The loyalties, so to speak, which we exact of knowledge and of truth are different. Of knowledge we ask fidelity to existence; of truth we require fealty to a standard, an ideal, a norm.

I do not think that this difference between knowledge and truth is trivial or negligible. The entrance into the knowledge situation of factors which are derived from the concept of truth will lead us to modify the assertion which so far we have clung to, the assertion that knowledge, unlike all non-cognitive attitudes, is concerned solely with existence. It will prompt us to regard as less intransigent the dichotomy of existence and meaning, of theoretical and non-theoretical interests. For the concept of truth brings to light a category, a dimension which might remain concealed were it not for the distinction between knowledge and truth. If this notion of truth were lacking, if we had before us only the dyadic relation which thus far has appeared adequate to the knowledge situation, we might easily suppose that we could get along quite well with the category of existence alone. I think that this is just what is implied and attempted in certain theories of knowledge. Take, for example, the correspondence theory of knowledge. Here you have on the one hand objective existences of various sorts such as physical objects and historical events. On the other hand you have subjective or mental existences, perceptions, ideas, memories. You have in the third place an existing relation of one to one correspondence between certain of the mental existences and certain of the objective existences. In so far as these three types of entities exist, there occurs an instance of knowledge. To be

sure, not all these three existent entities can be known. Perhaps the only one which is known is the subjective idea. The relation of correspondence, and the object which is other than the idea, may not be accessible. Nevertheless it is their sheer existence which defines and makes possible the existence of knowledge. The intent of any such theory is to move wholly within the area of entities which exist and occur. It exhibits the temper of positivism.

The same may be said of any approach to the knowledge problem which supposes that one may view knowledge from without as an existing event or fact in the same manner as one may presumably observe any other sort of occurrence in nature, such as an eclipse of the moon, the ebbing of the tide, or the contraction of a muscle.

A similar temper of positivism, the supposal that knowledge may be surveyed from without as a set of existing occurrences, is evident, I think, in a pragmatic theory of knowledge. Knowing is now to be viewed as a specific sort of process occurring in the life-history and behavior of certain organisms. One will study knowing precisely as one would observe digesting or walking. Knowing comes to exist whenever the continuity between stimulus and response which characterizes instinctive or habitual behavior is obstructed. Such obstruction may be due to competing and divergent stimuli. Or, a given stimulus may tend to arouse various conflicting responses not all equally appropriate and useful. The organism thus finds itself in a state of doubt and suspense, because its established modes of response to stimuli do not meet the requirements of its present environment or its existent needs. Knowledge is a name for the resolution of this suspense, and the reestablishment of adequate modes of response. Such restitution is the result of analysis and discrimination, memory and inventiveness, the hypothetical projection of tentative modes of response, an experimental embarking upon one of them, and a resultant success or failure. We cannot pause to develop the details either of this type of theory, or of correspondence theories. I cite them as instances

of the assumption that the knowledge situation is a set of existent facts and processes, as capable of description from without as any other existences. It is just this assumption which I am forced to challenge. If by nature one means the existing totality of facts and occurrences in space and time, including the entirety of biological phenomena, then the ingredient which makes knowledge knowledge, simply is not an existent, natural occurrence or entity. We are led into supposing that it is in part by the naturalistic assumption that everything falling within the category of meaning or of value is an adventitious and anthropomorphic accretion to sheer existence, and that consequently to know things for what they really are is to know them solely in terms of existence stripped bare of all such meaning. And this assumption is the corollary of the sharp dichotomy between knowledge concerned with existence alone, and all non-cognitive interests which are implicated with meanings. I should say that the one outstanding merit and achievement of the modern pragmatic movement is its insistence upon the untenability and inadequacy of just this bifurcation and dichotomy. But I am far from being convinced that the pragmatic theory of the way in which theory and practice, existence and meaning, are to be brought together, points in the right direction.

It is the concept of truth which stands in the way of any description of the knowledge situation as something which just exists or occurs, and whose nature is capable of revealing itself to an outside spectator. This is why the knowledge of knowledge presents a different kind of problem from the knowledge of sheer existences and occurrences which the ingredients of nature are commonly supposed to be. Knowledge, which thus far we have taken to be primarily concerned with its terminus which is existence, reveals a new trait and a new ingredient when the concept of truth supervenes. There is an ideal and normative impact upon knowledge which comes, so to speak, from a direction opposite to that from which facts and things, data and existence press upon us. Janus-like, knowledge faces

in two directions; toward existence, the given, the presented, and toward ideal standards fetched from the domain of truth. There is, for better or for worse, an intrusion of such ideal standards into all knowledge of existence. Truth grips existence, if at all, only through the medium of knowledge, and knowledge thus lies between truth and existence, subject to the constraint both of ideal standards and of existence. It is the intrusion of such ideal and normative factors into the knowledge situation which makes it impossible in the end to remain content with out initial bifurcation of the cognitive interest concerned solely with existence, and non-cognitive attitudes implicated with meanings. The theoretical and cognitive response of the mind to existence is shot through with ideals and purposes which, while they are genuinely theoretical, are nevertheless generically similar to the demands with which we confront existence in any region of experience.

If this intrusion of ideal criteria, of demands which we make even when we are bent solely upon knowledge, be resented as illegitimate, as obstructing or preventing the unalloyed knowledge of pure existence, existence uncontaminated by meaning, then knowledge is condemned *ab initio.* We construct a trap to catch sheer existence, but the only trap which it lies in our power to contrive, is one which catches existence permeated with meaning or, it may be, even meanings alone, divorced from existence, as in mathematics. In this case, existence is a veritable *ding-an-sich*, a substance transcending the area of meanings which are lodged in knowledge. I mention this possibility in this place merely to point out that the concept of such a thing-in-itself or substance is the concept of existence uncontaminated by such meanings, by such ideal factors and standards as are incorporated in knowledge, and which, I have said, spring not from the linkage between knowledge and existence, but from that between knowledge and truth. Could this normative and ideal constraint upon knowledge from the side of truth be eliminated, then nothing would stand in the way at least of the possibility that existence could be known for what it is,

unspoilt by any intrusion of ideal considerations and standards, of interpretation and normative appraisal, of meanings, in short. But even so, even if it be supposed that this is what knowledge ought to be, a disclosure of existence purified from the dross of meaning, it should not be forgotten that this is itself the statement of an ideal of knowledge. It purports to tell what knowledge ought to be, even if in fact it always falls short of the ideal through a failure to grasp pure existence—substance—not qualified and distorted by the matrix of meanings in which knowledge such as we have is imbedded. And this is a highly important characteristic of the knowledge situation and problem. It takes us back to the paradox which we noted at the outset. We want to know what knowledge is, and we discover that we can only state what knowledge ought to be. A procedure which we supposed to be descriptive turns out to be normative. We might suppose that we could survey knowledge from without, with no prepossession, no bias, committed to no judgment until after knowledge shall have delivered up its secret and disclosed its existing nature. But we find that our report as to what knowledge is implies a prior judgment as to what knowledge ought to be, that is, an ideal standard, as to what knowledge means when it is true knowledge. We thought we could get along with sheer existence and its disclosure to an external spectator, or knower who may faithfully report the "facts" without intruding any demands or ideals of his own. What we find is that we have all along been using a criterion of what knowledge ought to be, derived from the ideal which belongs to truth. We began by assuming that knowledge was, in intention and aim, directed solely upon existence, and that this intention of the cognitive interest, whether realizable or not, was sufficient to discriminate it from all non-theoretical and practical interests. What confronts these latter is never sheer existence, but existence invested with meaning. This distinction between existence and meaning appeared to run parallel with the difference between two diverse functions or even kinds of mind. On the one hand there is a mind which is wholly con-

cerned with and absorbed by the existences with which it is confronted, content solely with remarking and registering data, without intruding into the discovered existences any ideal ingredients whatever. This is mind contemplative and cognitive. On the other hand there is the mind whose energies and activities spring from wants and needs, the mind which is devoted either to wresting from the surrounding world that which is useful and good and significant, or in making over the bare neutral existences of nature into meaningful structures. This is mind vital and practical, instrumental and purposive. This was the situation with which we were left until the concept of truth came upon the scene. And it is this concept which brings into the knowledge situation an ideal factor, a normative ingredient, a regulative standard whose impact upon knowledge is no less than that which comes from the side of existence, of facts and data of whatever sort. It results from this that in knowledge, we have to do not with existence simply, but also with meanings which are either derived from or correlated with such ideal factors as originate not in sheer, neutral existence but in the requirements of truth. In the remainder of this paper, I shall first expand this statement and then consider the question whether or not the presence in knowledge of such ideal ingredients operates so as to frustrate the hope that in some measure what really exists may become accessible to our knowledge.

Every sustained pursuit of knowledge in mathematics, science, history, or wherever else, is guided and directed not only by the material, the data, with which the knower is confronted, but also by certain ideals of explanation and of intelligibility. There is operative throughout every cognitive enterprise some specific pattern which the knower would like to see exemplified by and embodied in the area with which he is at work. And it is only because of some discrepancy between what the knower would like to find and what he does find that there are scientific and theoretical problems. That thought and reflection, science and philosophy, are called into being by a problem is undeniably the case. That the given is problematic is indeed

true. But these are elliptical and condensed statements of a situation which is more complex than might at first be supposed. What I mean is that the problematic character of the given, of existences of any and every sort which are experienced, perceived, intuited, imaged, or thought, does not fall entirely on the side of the given and the presented. It is not as if the given announced itself as a problem to a mind which is a mere spectator, bent wholly upon receiving and absorbing that which confronts it and is presented to it. The problematic character of the given has its source in the clash and discrepancy between that which is given and that which the mind wants but doesn't find in the given as merely given. A mind which isn't looking for something, which has nothing at stake, which is wholly pervious and diaphanous, would never find itself in the presence of a problem. Every teacher knows how impossible it is really to give students problems. You may give them data as much as you like. But these data become problematic, they stimulate search and reflection only to an active and inquiring mind, which wants and needs something which is not found in the given and which cannot be anything in the nature of a gift. No less true is it that the domains of existence which experience offers to our mind as data and as gifts, are problematic only because our minds are in search of something other than what is presented. A problematic datum implies a dissatisfied seeker. Just as it takes two to make a quarrel, so it requires a factor other than mere givenness or immediacy to make a problematic situation. In all literalness, data are never problematic in their own simple being or givenness. The *esse* of their problematic nature lies, not in its *percipi*, to be sure, but in the presence of something no less mind-dependent, that is, a character of unsatisfactoriness, a felt lack of meaning and of theoretical value. It is thus the discrepancy between what the mind has and what it wants, between the datum and some ideal, which lends to the given its problematic aspect. Were it not for the tension produced by this discrepancy, the mind might well be content to watch the panorama of things experienced float by,

asking no questions, having no doubts, untroubled by truth or error. And a mind such as this would indeed have no knowledge. If I might turn to my own uses Mr. Santayana's dictum that "nothing given exists," I should accept it as pointing to just this fact. To say that whatever is indubitably and literally given is an essence and not an existence, is to say that the discovery and recognition of reality—of what really exists—is never possible for a mind which passively intuits and acquiesces in the given. The distinction between essence and existence (in Mr. Santayana's sense), like that between appearance and reality, arises only for a mind whose experience and whose searchings are guided, in part at least, by ideals, by some notion of what it wants, and a perennial dissatisfaction with what it has in the shape of the given. What could possibly lead a sheer spectator, with no interests of his own, with nothing at stake, to institute discriminations of ontological worth among the entities which float by before his intuition? Everything experienced, whether sensed, perceived, imaged, dreamed, or thought of, has being and exists for the thing it is. The judgment that some or all of these are unreal, are but appearances or illusions, is the achievement of a mind which has standards and ideals, which actively wants something and in some measure knows what it is that it wants.

The presence within knowledge of ideal ingredients which have a source other than in the given, is likely to be masked in proportion as we take smaller and smaller bits of knowledge and fasten our attention upon them. A scientific or philosophical theory purports to explain a mass of facts, or data. A theory about the facts appears to contain much more which is ideal and hypothethical, which is the product of ideal construction, than do the facts, the data, with reference to which the theory is constructed. We easily come to suppose and to say that we know the facts with a great deal more of certainty and assurance than we have with respect to any theory about the facts. But the situation is not so easily disposed of. We have to be on our guard against a perplexing ambiguity in the

notion of knowledge. Do we know the brute problematic data presented to us in experience? We have them indeed; they are experienced and presented. But they are problematic because they are not the sort of thing which will satisfy us, which will meet our ideals of intelligibility and of truth. Knowledge of them, theoretical mastery of them, is not yet in our possession. When we come to know the data of perception, the solid massive things we see and touch, they all but disappear from the world known to exist. Knowledge of what the facts themselves really are awaits the formulation of a theory, and is subject to constant revision as one theory is supplanted by another.

I have elsewhere[1] defended the view that nowhere along the entire cognitive front from the most elementary sensory awareness to the most speculative of theoretical constructions, do we find any place characterized by immediacy and nothing but immediacy. In our present context, this is tantamount to the assertion that nowhere in our cognitive experience is there a coalescence of what the mind has presented as a datum (and hence immediate) and what the mind wants, what some ideal of explanation and of intelligibility demands. And for this reason, every datum is also the focus of interpretations, ideal constructions and meanings which, whatever their origin and their validity, are co-present with every immediately presented datum. If you will have it that they are likewise immediate because such ideal constructions are there along with the immediate datum, you must at least recognize the very great difference between the two sorts of presentations. Such difference renders it ill advised, I think, to apply the adjective "immediate" to both sets of entities.

This is one ground for my rejection of any definition or theory of knowledge as the correspondence between ideas and objective facts. The ideas, judgments, and theories which, in a sense, we contrive and build up, penetrate and reconstruct the

[1] "Immediacy and Meaning," *The Philosophical Review*, XXXVIII, No. 2.

very facts to which, on the correspondence theory, they ought to conform. This intrusion of theory, interpretation, and meanings into facts, this unstable transmutation of initial problematic data into facts, is due to the operation within knowledge of ideal standards, of ideals of explanation, having their source not in data or in facts, but in the ideal requirements imposed by truth. The recognition that knowledge is not acquiescence in the given, but the incessant interpretation of the given in accordance with ideal standards does not, of course, by itself provide any insight into the specific nature of such ideals of explanation and of intelligibility. To recognize the discrepancy between what we have and what we want need not presuppose any full and clear knowledge of what it is that we really want. Is it a world of independent things with reciprocal causal relations which our ideals of explanation demand? Or shall we fasten upon the Parmenidean axiom that since identity alone is intelligible, the scientific intelligence demands the annihilation of diversity, and see with M. Meyerson in all science the effort to identify the diverse? Or shall we define intelligibility in terms of some species of continuity, which is a little less than Parmenidean identity, admitting some measure of change and transition, provided it be not too abrupt? Or shall we envisage intelligibility as the systematic organization and coherence of diversity and unity, bound together into a concrete universal? Is all knowledge guided by the search for a single unconditioned totality? What specific types of meaning do we search for in the effort to comprehend and grasp theoretically some province of existing facts and occurrences? We cannot proceed to any consideration of these questions here, but must content ourselves with the statement that in every sustained cognitive enterprise there are ideals of explanation which denote the formal characteristics of what the knowing mind is seeking. They are the source of the discrepancy between the given and the wanted, between data—brute data if you will—and intelligible data, between a problem and its solution. Cognition has its ideals, norms and purposes, no less than do our practical and non-

theoretical interests. Some theoretical ideal always directs the explanation and interpretation of any mass of data whatever. And this ideal, like any genuine ideal, has to express the life, the nature, and the interests of the mind or self which posits it. In proportion to the degree of success which the knowing mind attains, the objects of its knowledge cease to be sheer existences and become existences suffused with meanings, with theoretical values.

But now, in admitting and stressing such considerations as these, are we not caught between the horns of a dilemma, that dilemma which perennially trails along in the wake of every attempt to deal with the nature of truth? You admit, it will be urged, that every organized body of knowledge, of known and understood data, is permeated by meanings derived from the ideals of explanation and intelligibility which express the theoretical interests and demands of the knowing subject. But the intent of knowledge is nevertheless existence itself, existence which is independent of and unmodified by any interests or ideals of the knower. You are then faced with this alternative. Either independent existence is inaccessible to us because we can know only existences which are caught within the net of our meanings, of our human categories and discourse; or you must be willing completely to ignore and deny any existence untrammeled by meanings which we impute to and weave into the objects of our attention and interest. You must go either the way of skepticism, agnosticism, and radical dualism, or the way of humanism and pragmatism. In neither case is there any genuine possibility of a metaphysics, a knowledge of the independently real. This whole situation is of course nothing but the ego-centric dilemma, writ large.

I believe that there is still another possibility. The two alternatives just now indicated, antithetic as they are, nevertheless issue from a common assumption and premise. They both presuppose that there can be no correlate in existence of the meanings which spring from the mind's own ideals of explanation and of intelligibility. Both types of theory assume that

the interpretations and ideal constructions of which all science and knowledge are compacted, are barred from being discoveries and disclosures of objective meanings precisely because they arise through the construction and purposive activities of the mind as theoretical. The mind, through its activities, theoretical as well as practical, is conceived on the analogy of a factory whose products reveal the machinery which turns them out. Such products in no way disclose the nature of anything which exists independently of the processes of manufacture. If such artificial products existed *in rerum natura*, awaiting discovery, it were idle and foolish for us to construct them.

But the situation becomes altogether different if there should really exist, independently of us, any entities or intrinsic constituents of entities, whose very discovery is dependent upon active processes of ideal construction and interpretation. The meanings which existences seem to acquire when they are thus interpreted, explained, or in any way made significant, would in this case be disclosed and discovered through those constructive activities of the mind which formerly appeared only to generate them.

There is nothing strange or surprising about this possibility. The disclosure to any organism of what exists in its environment is dependent upon the presence of an appropriate organ. If objects are to be touched and felt there must be sense organs of touch. If things are to be seen there must be eyes. The biological evolution of sense organs is at the same time a growth and modification of the segments and dimensions of the accessible environment. Not much more than the environment immediately contiguous with the skin can be perceived through touch. The eyes are distance receptors. Memory and anticipation do for the time dimension what the eyes do for space. If now the larger sweep of rhythms and patterns in nature is capable of being disclosed at all, there is needed for their apprehension the whole apparatus of scientific inventiveness, scientific instruments, processes of thought and reasoning, the elaborations of mathematical invention, ideal constructions of the most varied

kind. Were it not for these ideal constructions, we would be as blind to the relational and intelligible structures of our world as we would be to colors did we not have eyes. If we are to get at them at all, it can only be because we are willing to give free play to such processes of ideal construction. They are discoverable, if at all, only through such types of inventiveness. And by what else could these ideal constructions be guided if not by ideals of explanation and intelligibility lodged in the reason as theoretical? I do no more here than to present this as an alternative hypothesis to both of those positions which would otherwise constrain our choice. You must either—so runs the usual alternative—take the notion of independent reality, of substance, of the indefeasible existence of things and occurrences and energies in all seriousness, or you must forego the hope of any genuine knowledge, of any metaphysics, of any science which does more than take into its reckoning the nature and order of the experiences which are vouchsafed to us, wholly contingent as they must perforce be upon our sense organs and nervous systems, our grammar and discourse, our perspective and ordering. Either realism and dualism, or humanism and positivism. And if you go the first of these two ways, if you affirm the existence and reality of substance, you are still compelled to admit that every alleged description, knowledge, or judgment about substantive existences is shot through with terms, categories, and meanings originating in our ways of thought, belief, and discourse. So that all of the significant terms which we apply to existence are the fruits of our interpretations and ideal constructions woven around and imputed to an existence which has no claim to them in its own right. The initial premise is here the belief that ideal constructions in thought and discourse cannot be vehicles through which objective meanings are disclosed. It is this premise which I question. How else could objective meanings be revealed to our minds save through active processes of ideal construction? I confess I do not know. And I do know of instances where something like this surely occurs. The markings on the Rosetta Stone do

really, I suppose, possess a kind of meaning which the glacial markings of rocks do not have. What these inscriptions of the Rosetta Stone mean could never be disclosed to a mind content to resume or to echo or contemplate merely the existing marks themselves. Nor would these meanings become evident, if the entire causal series of occurrences initiated by the neuro-muscular events in the bodies and hands of the ancient Egyptians were completely presented to a comtemplatively cognitive mind. The apprehension of such objective meanings is dependent upon active processes of interpretation and ideal construction. Just as the problematic character of data is not presented in any sheer datum itself as a gift and hence cannot be simply found, so it is with meanings, with the theoretically significant aspects of data which render them understandable. The intelligible and theoretical meanings of the glacial markings too, though they express no human or conscious intent, are likewise accessible only to a mind willing to enter upon a sustained process of reflection and hypothetical construction. But it does not necessarily follow that the theoretical meanings which are thus elaborated in thought, inference, and reflection may not be the very meanings which the glacial markings themselves really own.

I take it that the central problem about all inference and reflection is this. Wherever there is thinking there is, to use the term of Locke and Bradley, an "operation." It is an operation performed upon some datum. But the extraordinary and paradoxical thing about such operations is that their results are ascribed to and appropriated by the datum itself. How can this be? That it should be so shocks us only because we assume that the existence disclosed in the datum is a bare nucleus around which we weave our meanings and then illegitimately impute them to the object. It is this assumption and the whole conceptual framework which supports it, that I think we need to scrutinize. I am not content with the view according to which the categorial characters of existence, those which make existence theoretically significant, are spread out before the mind in the same way as are existential and occurrent data.

This was, as I see it, the theme of the classical Greek tradition, restated in our time by Mr. Alexander. Nor am I content with the drift of the naturalistic tradition, powerfully imparted to our modern thought by the scientific revolution of the seventeenth century, that the significant aspects of our world—all that makes it intelligible and livable—are essentially human and artificial constructs, adventitious to a substantive existence which is wholly neutral with respect to all meaning and all value. This tradition finds its classical expression both in the philosophy of Kant, as usually interpreted, and in that of Hume. Knowledge is indeed concerned with existence. But the quest of knowledge is throughout guided by ideals, evincing at every stage from perception to the elaboration of hypotheses and theories, the constraint of theoretical ideals. The hypothesis that these active operations of the mind provide the one indispensable vehicle through which the inexhaustible wealth of objective meanings native to existence can be known and disclosed, seems to me an hypothesis worth the venture. Itself, like all metaphysical ventures, is an ideal construction, and not, if we are right, thereby precluded from disclosing the nature of things.

A PRAGMATIC THEORY OF TRUTH

BY

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As far back in time and in cultural epochs as we can trace human society we can find there something that answers to philosophy and something that answers to science. They are the myth and the cult. In early social conditions they stand vaguely for theory and practice. In terms closer to the ideas and activities to which they refer they may be called "rationalizations" and habits. It is clear that the habit comes before the rationalization or explanation. The cult is not any habit. It is one that is social not only in its origin and expression but also in its function and valuation. It belongs to the group and it serves to relate this primitive society to its habitat and to its past and future. The myth supervenes upon the cult. The cult rapidly became archaic, not simply in the sense of old, but in the sense of having outlived the situations out of which it had arisen. Whatever reasons we find for this or however we label them, the fact made them strange as habits. They could not be understood entirely through the situations within which they were practiced, and the myth was the explanation. The myth gave preeminently the explanation that did not arise naturally out of the original situation. It was the explanation of a habit, that just as a habit was inexplicable. It is a reason for action when the reason does not lie in the actual situation within which the action is going on. This is, however, in one respect not a correct statement of what takes place, for it says that some *reason* existed in the situation before a reason had to be sought, whereas only things existed there. Our cautious ancestors, when yawning, blocked the way to the entrance of evil spirits

by putting their hands before their mouths. *We* find a *reason* for the gesture in the delicacy of manner which forbids an indecent exposure. But evil spirits were spirits that one warded off. The parry is simply the obverse side of the thrust. If we insist on taking analysis into conduct in which it had no place, we must find the correlate to the later reason in the sufficient definition of earlier things. We do this when we replace the evil spirit by the microbe and form new and better habits instead of rationalizing the old ones.

Perhaps I am myself indecorous in suggesting an analogy between a certain sort of philosophic analysis and a guarded yawn, but I will venture it for it opens a door to a distinction worth making. I refer to the distinction between a scientific approach to nature and that of a philosophy that has ensnarled itself in a hopeless epistemological problem. While science has been discovering and hypothetically constructing things that lead to new and fortunate responses to the world, this philosophy has rationalized the discarded attitudes toward nature. Those discarded attitudes were the relations of a soul or mind to a world whose *raison d'être* was its being the habitat of man. The philosophic rationalizations of these attitudes have consisted in presenting the world in the guise of men's sensations and ideas, in a word, in his states of consciousness. The primary reference of nature to mind which obsessed Renaissance philosophy was the rationalization of the medieval cult. Treading close upon its heels came the task of getting back to external things from a world described in states of mind. Science, Gallio like, cared for none of these things. It was occupied in replacing the furniture of earth and heaven with masses, velocities, accelerations, chemical elements, and living cells to which predictable responses could be secured. While science has been interested solely in getting new and reliable things, and in its mental processes only as means to this end, philosophy has not only made the thought process its field but has insisted on so analyzing it that new things and old can both be stated in the same mental terms. It has not given to the thing its value

of a thing before the problem arose and after the solution, but has kept it in terms of logical and metaphysical speculation. It has not only explained the old and so rationalized it, but has as well forced the new into the same dress. My thesis is that the object that tells its own tale has no longer a place in the field of analysis, but is simply there, until it breaks down and propounds some other problem for thought.

Professor Whitehead in *Science and the Modern World* displays the entire adequacy of medieval doctrine in its explanation of all that happened. There was a reason to be found for everything either in Heaven or on Earth or if need be in Hell. But Professor Whitehead did not point out that this perfect fit between doctrine and the course of events in the world reflected rather the nice adjustment of the cult to men's needs. In the face of every exigency the cult presented men with something to do. They were not called upon to think. The cry was not, how shall I understand? but what shall I do to be saved? Granted the ineradicable guilt of man and the incomprehensibility of an infinite perfect God, and explanation was almost too easy. There was abundant occupation for scholastic thought in the adjustment of such incongruous ingredients, as Greek philosophy, the Pauline doctrine, and the administrative theory of the Roman hierarchy. But these speculations did not touch the world of things within which men lived and moved and had their being. Things were not analyzed. They were what they were, what aroused men to action and satisfied their needs or drove them to the refuge of the Church. I think Professor Whitehead is wrong in calling this a rationalistic mind. Rationalization set in with the Renaissance; and while Renaissance science set about the discovery of new things, philosophy set about the task of restating the new world in the terms of the old. Leibnitz' deity was not only the God of the Theodicy but the supreme mathematician as well. The world was a mechanism, but the work of a supreme mechanic to serve his ends. Descartes' anxious effort to avoid quarrels with the Holy Office was not simply an escape complex. However, this

attitude of philosophy must not be accounted to it for unrighteousness. Science was quite incompetent to present society with a complete new world. It offered only ultimate physical and dynamical elements and a powerful apparatus of analysis.

This may seem to some, perhaps in an invidious sense, a long way from truth. Its relation to my theme is this: Science set out from a world which was there but which presented new problems. Science analyzed the world and put it together again in a Newtonian system and left the material universe there. Problems fortunately continued to abound, but a system of masses moving according to Newton's laws was the presupposition of the solution of these problems. Truth had nothing to do with the world in so far as it was not involved in the problem. But philosophy's problem was to bring this world of science both in its analysis and synthesis into accord with the world men believed they were living in. It had to find a way of stating the world that was there for science—the mechanical world—in terms of the objects that men sense and want and fear. I mean that philosophy's task of rationalization compelled it to make a problem out of the world which for science was simply there, as the presupposition of the problem science was undertaking to solve. Rationalization, if I may repeat, is giving an explanation for attitudes and responses, when the situation which originally called them out has passed away. It provides another situation which will still arouse these responses. The Newtonian mechanical universe in a considerable measure removed the situations which called out naturally the responses due to man's central position in the world. Philosophy in rationalizing this new situation sought so to restate the world which science did not call in question that human experience would remain central. Philosophy had then to restate the world which for science was unshaken, and the success of science compelled it to use the results of scientific analysis. When it sought for its own πουστω, that world within which its problem lay, it could find it only in the mind of the individual—*cogito ergo sum*—and Hume shattered that. For science, truth

is the accord of its hypothetical construction with the world within which the problem has appeared. For philosophy this world has also been made a problem, and we can therefore exclaim with Pontius Pilate, What is truth?

My proposition is that every problem presupposes what is not involved in that problem, and which is in so far valid. The truth of the judgment which represents the solution of the problem rests upon the harmony of its dictum with that whose validity is not problematic. There are various implications of this proposition. One is that there is no such thing as Truth at large. It is always relative to the problematic situation. What is not involved in the problem is not true nor is it false; it is simply there, though there is no suggestion that a problem may not break out anywhere within it. Confessedly the world of science presents the evident illustration of this. Research is ready to find a problem at any point in the structure of scientific doctrine, a problem which may invalidate any theory. Indeed it welcomes such outbreaks, and lives its exciting life in their midst. What arrests the philosopher's attention is that this attitude carries with it no sense of insecurity. The philosopher still has the Medievalist's yearning to rest in the arms of finality. Whether idealist or realist or neo-Kantian phenomenalist, he seeks repose for his perturbed spirit in the everlasting arms of an absolute of one sort or another. His philosophic mind is attuned to the present French political mind; it cannot conceive of security of method, it must have security of structure.

It is true that the scientist philosophizes; and who does not? And then he is prone to lead a double life, to seek repose from the excitements of research in the restful arms of an ultimate doctrine that in some fashion envelopes him. He assures himself and us that Newton's laws were but first approximations; that however theories effloresce and wither, the data of science remain unchanged—or at least that it is always possible to so restate them that they take on the form of eternity, and with this view *sub specie aeternitatis* he is assured that his philo-

sophic God is in his heaven. But this is not his scientific attitude. In this attitude, data do not implicate persistent structure. They appear first of all as exceptions—the phenomena of the heavens which Greek astronomy from the time of Pythagoras on sought to "save"—but when the saving theory has rescued them, they are no longer exceptions, they have become instances. In a sense we can identify, "sprinkled along the waste of years," the observations of the Mesopotamian Magi, of Hipparchus, of Ptolemy, of Tycho Brahe, and of our own astronomical tables; but, when so isolated, they have no being in any system independent of those within which they have appeared. They are building stones which had their places in many "transitory structures high," but "it nought avails their architects now to have built high in heaven towers" for they have no final place in any abiding edifice. The datum must seek its meaning either in its opposition to the doctrine which it invalidates, or in that which the genius of the scientist constructs to give it again a local habitation and a name, or in the theory of the historic process by which it has passed through many "fabrics huge" which have risen like exhalations and vanished like the cloud-capped towers of skyey landscapes, but there is no ultimate structure in which their final meaning reposes. Nor does the scientist, when he is not crowning his life-work with Gifford lectures, endow his data with the logical form of such final meanings. They are pertinent solely to the experiences within which they arise. Still less can the data be identified with the building material of the world within which the problem appears. The evidence for this is found in the presupposition of this world as the conditions for the appearance of the data. Whether the datum appears as an exception or as an experimental finding in support of an hypothesis, its existence involves things that cannot by definition be stated in terms of the given world. This speaks out of the very nature of the exception, and it is heard equally clearly in the nature of a conclusive experiment. The experimental finding must take place under conditions which rigorously ex-

clude the theory which the findings will support—otherwise there is an *argumentum in circulo.* You must be able to prove that your guinea pig has the disease, which appears after inoculation with the hypothetical germ, by means of clinical evidence other than presence of the germ. You cannot by the same findings prove (*a*) that the guinea pig contracted the disease through the germ and (*b*) that the disease which the guinea pig contracted is the disease in question. Now it is of course true that we continue to talk about the disease in terms of the germ that was identified in the experiment, but it has become a very different affair. Then it was something foreign to the life-process of the guinea pig; now it has become a parasite that has a natural habitat within that process. You describe the life-process of host and parasite in a single biochemical formula.

The truth that your experiment establishes is that the world—an ongoing intelligible concern—within which a problem has arisen, continues to exhibit itself as the same ongoing intelligible concern under conditions which alone can be stated in terms of the hypothesis you have presented. The new predicate with which you are qualifying this subject cannot already be implied in the subject. The copula which triumphantly connects them is the experiment, so constructed as rigorously to exclude the new character from the subject that was there and at the same time to jockey the world into such a situation that it inevitably exhibits this character.

But how can it inevitably exhibit this character unless there was already present in the subject that which implies the predicate? That is, how can we make a universal proposition out of the mere juxtaposition of two experiences—unless there is in advance in the subject, as it appears in the judgment, the connection which the copula has merely exhibited? The answer is found in the form of the problem that appears in the subject of the judgment. Back of any such experiment as that to which I referred above, lies the breakdown of medical description and treatment of the disease. Instances appear which negative this description and practice. One cannot describe and treat the

disease as the disease has been described and treated; which means that other characters which call out different responses, and which did not enter into the former picture of the disease, are now a part of the picture. The solution of the difficulty is found, if it is found, in a reconstruction of the picture that enables the conflicting tendencies to find expression—that is, which enables the inhibited action to go on. There is a meaning in the old accounts and methods and there is a meaning in the new experiences which invalidate them. Truth is found in such a formulation of meaning that the conduct which these meanings have implied may be made possible. We never simply throw away values which have been there. They are allotted to their proper spheres, within which they give rise to appropriate responses. The subject of the *judgment,* as distinct from that of the final *proposition,* is the situation within which this conflict lies, and the final predicate which the experiment justifies, is the reconstructed picture which gives to the conflicting values their own functions. We are not in the judgment simply associating two experiences with each other. We are making possible the experience which the conflicting elements in the subject situation call for. The reconstructed picture of the disease gives to the former conflicting characters of the subject an organization which admits of intelligent response. The subject so characterized is then in so far true, but the organization of meanings was not in the former subject. In so far as the reorganization is carried out consistently with these meanings, the result necessarily follows, but the reason for the connection between the reconstructed picture and the appropriate consequences was not present in the former subject.

But it was in nature, was it not? It was not in that phase of nature which appeared in the experience of the men who recognized the problem and solved it. The judgment is a natural process taking place in the experience of human organisms, and its truth is a natural condition that attends upon the success of these organisms in solving their problem. The word, success, I do not entirely like, because of the implications which

are apt to go with it. It is associated with satisfactions and the agreeable experiences which attend upon satisfactions. The test of truth which I have presented is the ongoing of conduct, which has been stopped by a conflict of meanings—and in meanings I refer to responses or conduct which the characters of things lead up to. The truth is not the *achievement* of the solution, still less the gratification of him who has achieved it. There is something of the old hedonistic fallacy in this. Pleasure undoubtedly attends upon the object of one's desire, but one does not therefore desire the pleasure. One is generally gratified by the solution of one's problem, but the test is the ability to act where action was formerly estopped. The action may be a very sorry affair and afflicted with gloom, but if the road now lies open to the meanings which had nullified each other, this road is the true road. I hope I have made evident that in this doctrine the data are not in the world out of which the problem has arisen, but belong to the statement of the problem; and that in the solution of the problem, they pass in new forms into the reconstructed meanings which experiment shows to fit into the world, in so far as it was not involved in this problem.

Truth is then synonymous with the solution of the problem. But judgment must be either true or false, for the problem is either solved or is not solved. In this sense a judgment becomes a proposition. The proposition is a presentation in symbolic form of the copula stage of the judgment. In the subject stage lies the conflict between different responses. You call up James Brown by telephone at his office, and are informed that Mr. Brown is not in the city. This means to you the postponement of your interview. But a friend tells you that a short time ago he saw James Brown, and this means a possible holding of the interview. You may catch him before he leaves, and you call up his house. The subject of the judgment is a man whom you will meet later in the week and a man whom you will meet today. The undertakings inhibit each other. The predicate stage of the judgment, the hypothesis that he is leaving but has not yet left, presents a different James Brown, who so organizes your

responses to see him later and to see him today, that they are no longer in conflict, and the reply from the house establishes the truth of the proposition that you can see him, if you can reach the house within an hour, and thus reports the copula stage of the judgment, which has tested the hypothesis. This lies within the field of conduct and the truth of the proposition characterizes that conduct, but it also sets up an affirmation which transcends that hastily accomplished interview. It is eternally true that James Brown was at his house on that day and on that hour. The established judgments precipitate propositions which seem to belong to another realm—"truths which wake to perish never."

My guess is that we can best come to terms with these truths in their last retreat, the propositional function. *If* the telephonic conversation spoke truly, and *if* James Brown is a man of his word, it is to all eternity true that James Brown was at his house on that day and on that hour. But a truth that—only making and supposing—wakes to perish never is affected with an eternity that has lost its impressiveness. I do not mean that it has lost its usefulness. This propositional function may establish an alibi that will save James Brown from the electric chair. But its translation into a timeless realm has a string tied to it that must sadly disturb its enjoyment of that rarified atmosphere, and the shadowless landscapes of that Platonic heaven. What has happened to the judgment in its precipitation into a proposition is that it has so purified itself from the empirical event out of which it arose that it can now enter into relational symbosis with an indefinite number of other propositions. And the advantage of this is enormous. It connects James Brown's spatio-temporal location with the entire complex of his city's life and for that matter with all history and may in future time make it the firmly supporting datum of some historian's fabric of the past. But its truth is hypothetical, and draws its life-blood from the realm out of which it emerged into the realm "in which we never know what we are talking about nor whether what we are saying is true," if I may follow

Professor Mackay in quoting Bertrand Russell, unless we can get some nourishment out of the insubstantial tissues of that logical symbiosis. But the number of those who can subsist on this subsistent diet becomes smaller and smaller as we climb up toward its infinite classes and the letters of the Hebraic alphabet. The fact is that we do not want the "all"; we want the "anys." We are interested in the possible combinations of propositions which will organize our conduct and the world within which that conduct takes its course and which gives to that conduct its interpretation and its import. The truth of any relational complex that inhabits this realm of eternal objects or universals or ideals will be found in its effectual employment in the construction of working hypotheses. They must themselves be coherent to be effectually employed, but coherency is not truth. It is not the coherence of doctrine but its cogency that implicates truth and cogency resides ever in the field of activity.

In one aspect of Professor Loewenberg's paradox of the judgment, the judgment is shown to include in its description both the "what" within the judgment and the "that" which must inevitably transcend the judgment. My simple-minded escape from this paradox is found in regarding the truth of the judgment to lie in such a construction of the "what" that it becomes a "that"; and further in the assumption that when this takes place it is no longer a judgment, but something that is there. When the hypothesis works it ceases to be a hypothesis; it is reality, not eternal, indefeasible reality, but the only reality with which we are acquainted, which we fear or hope will break down to be again reconstructed.

I am positing here moments of problematic reflection and moments of unreflective reality; but is not reflective experience coterminous with life, is not life a continuous solution of problems? Pragmatic doctrine identifies thought with the solution of problems, and thinking is what raises human experience above that of the beasts that perish. There is, of course, here an ambiguity in the word thought. It includes commonly our consummations, our aesthetic experiences, our possessions, our

enjoyments and our sufferings, but I will for the moment put aside this ambiguity, and turn to the question of the relations of the different problems to one another. Have they not an essential connection among themselves, so essential a connection that a man's life seems to be the attempted solution of the single problem of his intelligent existence? Is not this the implication of the unity of his personality, and does it not become evident in the most thoroughgoing undertaking of life? Can we not fairly say, that what we call our conscious life turns out to be one concatenated enterprise of thought, within which we become now intermittently and now steadily aware of the interwoven tissue of our seemingly discrete problems? Especially is it not true that the solution of no one problem can be achieved without that of many others and perhaps without the solution of all of them? This is beyond doubt what we are apt to imply when we undertake to grasp the world as a whole, and bring into vital unity the presentations of many sciences, and get out to our view the involvements of each in each other. It is genuine thinking because it leaves nothing out. It has the entire history of philosophy behind it and it is peculiarly the attitude of the religions. If we recognize such a genuine grappling with the universe as the problem of the mind, the problem of the whole self, and further recognize the present insolubility of the problem, except as partial solutions exhibit an approach toward the intelligibility of the universe, does not this pragmatic doctrine itself sweep us into the current of Idealism? What is the world but a continued working hypothesis, a thought structure which is continually completing itself, as the problem breaks out now here and now there? From this standpoint does not the coherency, not simply of ideas but of the problems among themselves, become the very test, not of a final truth, but of the approach toward truth? Is the universe in thought anything but the judgment in the process of ceaseless predication?

Now there are many points from which I could attack, however successfully, this account of experience, commencing with

the ambiguity which I suggested above in the term thought, but there is, I think, an appeal in the idealistic doctrine that is of a more profound importance. It is found on the one side in the constructive and integrative character of scientific thought and on the other in the demand so insistently made that the world must be an intelligible whole. Our problem is the attainment of an intelligible universe, and we advance toward it by processes of scientific hypothesis, which are never out of the range of possible attack and which are generally but provisionally adopted; and this advance toward a goal at infinity, so far as our minute endeavors are concerned, takes place by continual reconstructions in many fields that confessedly implicate one another. The goal of experience lies indefinitely beyond experience, and the method of approach is by a thought construction which can have no criterion but the growing coherency of their objectives and their partial attainments.

Now in so far as *scientific* procedure is concerned, a test of truth, to be found in the organic interrelation of problems and their partial solutions, we can without more ado incontinently dismiss. Both Schelling and Hegel were committed to it by their philosophies of nature, but their grandiose undertakings awakened no sympathetic interest in experimental science. I do not mean that the scientist does not recognize that the solution of one problem may wait upon the solution of another or of many other problems. I am calling attention to the fact that the experimental method can only be applied where a reality which is not called in question sets the conditions to which any hypothetical solution must conform. The scientist puts a question to nature, and so far as the answer to that question is concerned, nature cannot herself be problematical. The scientist's technique consists largely in distinguishing that which is in doubt from that which is indubitable. You may deny the truth of his solutions, but you cannot by any possibility persuade him to regard his problem as lying inside of another larger problem, for then he has nothing by which to test his own hypothesis. Survey the almost inextricable maze of scientific hypotheses

which have been called out by Relativity, the quantum postulate, the seeming corpuscular nature of light, the Compton shift, the evidences for different diameters and forms of the electron, the rate of radiation of the stars, and the presence of high voltage short rays reaching our atmosphere from stellar space, and note what, in all this confusion, is stable and unquestioned; what it is to which each hypothesis must accord if it is to enter into a scientific doctrine of nature. It is the experimental finding which has been obtained in complete abstraction from any and all hypotheses. These for the scientist are firm reality, and these findings are simply certain happenings, determined within the limit of the error of observation, in a world which is not involved in the problems which engage the intense interest of science. If the Pragmatic doctrine is a logical generalization of scientific method, it cannot merge the problem that engages thought with a larger problem which denies validity to the conditions that are the necessary tests of the solution which thought is seeking.

Realists and Pragmatists alike have agreed that the perceptual knowledge to which the expert in knowledge, I mean the scientist, ties up, must be recognized as valid, though they have fallen out sadly among themselves over the definition of the percept. In reference to these civil strifes, I should like to point out that the scientist's findings are always in terms of things, never in terms of sensa or percepts, and that the legitimate analysis of perception by scientific psychology also always presupposes things. The psychologist has his own laboratories, and comes back to his own indubitable findings in terms of his own apparatus and *Versuchsthiere.* It is by means of what happens to these things in observation that any theory of observation must be tested. To reverse the order of testing lands us in Bertrand Russell's world inside of his brain. In the nature of the case it is not an observable brain, but one which we can only adumbrate by the probable correspondences of logical patterns. It affords however an heroic example of "following the argument" even when it leads the dialectician not only into a

hole, but also into pulling the hole in after him. One afflicted with clausophobia may prefer the heroic leap of Santayana's Animal Faith.

There is, however, no question that there is a profound meaning in seeing the world whole, but the most enlightening approach to its meaning is to be found in bounding it, that is in discovering what it is not. We never mean by the expression, if we are using it profitably, what the world is going to be. Seeing the world whole will include undoubtedly the sort of wisdom which carries us sagaciously from the past into the future; but this is wisdom, it is not knowledge. The future is really future, it is not merely what we do not see, and no acuity of prophetic vision could bring the morrow in its essential character into our experience. Every morrow emerges. Again, seeing the world whole does not connote any exhaustive resumption of the past. Every generation rewrites and so in a sense relives the past. The histories that we have transcribed would have been as impossible to the pens of our fathers as the world we live in would have been inaccessible to their eyes and to their minds—and that not because we have richer sources than they. History is the interpretation of the past in terms of the present as truly as it is the interpretation of the present in terms of the past. Another Socrates has fascinated Athenian youths, another Caesar has crossed the Rubicon, another Jesus has lived in Galilee since any of us were children. And we know that our children will inhabit a different world from ours and will inevitably rewrite the annals we have so laboriously composed. But this does not disturb us, nor do we feel that seeing our world whole involves the vision of their future nor its attendant past. Past and future are actually oriented in the present. It is the import of the present that we desire, and we can find it only in the past that the present's own unique quality demands and in that future to which it alone can lead. In a sense every unexampled present creates the past that is logically demanded for its explanation. It is the fathomless wealth of the perceptual present that was veiled to Hegel's eyes. Seeing

the world whole is gathering that import so far as in us lies. All experimental findings are lodged in perceptual presents and they are the final touchstones of all theories, and it is from the unpredictable solutions of its problems that the ineffable future flowers out. There is another sense in seeing the world whole that we have already touched upon, in the phrase, the logical symbosis of propositions. But there abstraction lodged them in a subsistent world, where they had the bloodless being of unimaginable entities that could be charactered only by empty symbols. Symbols are in truth the appropriate stimuli of our attitudes. Attitudes are the responses which are present in our behavior either in advance of the stimulation of things, or, already aroused, yet await the occasion for their full expression. In the first case they may appear as ideas or concepts, in the second as the meanings which constitute things. The concept of a book is the organization of attitudes, which, given the stimulus, will express themselves in reading, writing, borrowing, drawing, buying or selling the book. They are all there in the dispositions of men, as forms of conduct which await the appropriate spring to call them out. Given the symbolic stimulus whether in articulate speech or in imagery, and the responses are there in the conduct which is organized by them. In the second case the book is there as an adequate stimulus to the response and has the meaning which was implied in the so-called concept. The book can acquire that meaning only in a situation within which the implications of that which happens can be actually present in the happening. The rush of the torrent carries death to the man who rashly ventures into it. It has not that *meaning* unless in advance of his fatal plunge this outcome was present in its nature, and it is only in the organized conduct of men that the bare relatedness of events and things can pass over into meaning, that meaning can invest events and things. This investiture takes place through the value which the symbol attains when the indication to another becomes also an indication to him who gives it to his fellow. The torrent is not only the blind power which sweeps the victim

to his death, but in the community of those who communicate with each other, the force of the torrent has taken on a meaning in so far as each is wont to indicate this to others and so to himself. It has become something more than the succession of masses of water with their overwhelming momentum. In the experience of the community this force is something to be avoided or perhaps made use of for the production of industrial power. Entering into relation with the community, the torrent has acquired a meaning, which apart from that relationship it did not formerly possess. Through communication men have become able by symbols to organize their innumerable attitudes of possible conduct. The very relationship of the symbols to one another is the outward evidence of the relationship of possible acts which these attitudes express in conduct. Woven together into structures of symbols they excite in men the related processes which they make possible; and things, becoming the world or environment of such a society, acquire the meanings which this conduct connotes.

Now seeing the world whole is response in the widest scope of such common conduct. It means entering into the most highly organized logical, ethical, and esthetic attitudes of the community, those attitudes which involve all that organized thinking, acting, and artistic creation and appreciation imply. It involves being at home in the universe of discourse, in the kingdom of ends, and in the world of beauty and significance. Seeing the world whole is the recognition of the most extensive set of interwoven conditions that may determine thought, practice, and our fixation and enjoyment of values. The truth of such vision is found in its competent evocation of the meanings with which society has endowed its world, in so far as it successfully interprets our ends and our appreciations. Both the ideas and the meanings which they connote lie within conduct and are only pertinent to the exigencies within which they appear, but they bring to bear upon these incidents which make up our lives the full rational, social, and cultured nature of citizens of an organized world. Coherency here spells applica-

bility, but it does not spell truth. Seven nights ago, I followed, delightedly, Professor Adams as he led the way through the intricacies of the metaphysical landscape of existence and meaning. Thanks to his competence we did not finally come upon truth in a valley of dry bones of bare existence, nor in a tempting mirage of meanings, but we found truth in the content which meaning gives to existence and the reality which existence gives to meaning. The formula by which he infused life into these dry bones and concreted these values I cannot employ. Mine is not the master mind for which it will work.

Thought is indeed constructive in the hypothesis, but I cannot find that the structure of reality within which her reconstructive work goes on is also hers. She indeed presents this structure in her blue prints, but it has not arisen out of her thinking. Thinking pushes on this structure into the emergent future, but to my mind she lays no claim to the world which she thinks and aids in building out.

Truth expresses a relationship between the judgment and reality. In the formula of this paper the relationship lies between the reconstruction, which enables conduct to continue, and the reality within which conduct advances. The judgment comes with healing in its wings. It might be called a reparations theory, for, as we all know, a reparations commission requires first of all a formula, a healing formula. Most reparations commissions are no sooner organized than they adjourn, to be called together when a committee, appointed to discover such a formula, can report. Such a formula is a judgment. Its relationship is not so much that of correspondence as of agreement. The judgmental reconstruction fits into organized reality. Of course a formula may fit and still be ineffectual. That is, many so-called truths are insignificant and trivial, but this overlooks the character of the judgment, which is one of reconstruction and does not attain truth until experience can proceed where it was inhibited. If coherence means such a dovetailing of the hypothetical reconstruction with given reality, we might call the relationship that of coherence. But coherence theories

of truth have in view rather the coherence of the structure of the judgment, assuming that as a thought structure it must be consonant with a thought constructed universe, if only it be correctly thought. That is coherence refers to the formation of the hypothesis rather than to its agreement with the given conditions of further conduct.

Now it is evident that theories of truths will vary with their corresponding theories of reality. As I have just indicated, an idealistic doctrine which sees in the universe a thought structure that is the product of a timeless judgment, will find its criterion of truth in the adequacy of the thought process, an adequacy which will be revealed in the coherence of the judgment. For it is only in that inner coherence that a finite judgment can show its harmony with the infinite process of which it is a part. The whole universe is not there to enable the mind to estimate its coherence with its entire structure, but the process is identical with that of the absolute and in so far as this process reveals its identity by its inner coherence it possesses the only standard of truth possible. All idealisms are not Hegelian nor neo-Hegelian, in the common usage of that term, but what I take to be common to them all is the approach to reality from the standpoint of thought. We can approach the noumenal nature of reality only through the noumenal nature of thought; the perceptual dress of nature is transient, contingent, and particular. It is only by thought that we can get inside of it to its uniformities, its abiding structure, and its inherent necessities. Such an approach will inevitably look for its test of truth in the competency of the thinking that reveals it.

A realism whose method is that of analysis sees in reality ultimate elements and the relations which they subtend. Having anatomized reality into relata and the relations, truth of the judgment is found in a correlation between these and the cognitions which answer to them in the mind. We find a new set of relations and relata, that lying between things and the awareness of the mind. If these relations offer the same pattern of structure as that which they answer to in nature, we have the

test of the truth of the logical pattern as it appears in the judgment. It is confessedly a truth of logical correspondence. It becomes incumbent then upon any doctrine of the truth of the judgment to present so much of its view of reality as is involved in its own criterion.

So much of a doctrine of reality is, I think, evident from what has gone before in this paper; that the experience in which human beings are involved is a constituent part of the reality which they judge; that the problems do not arise in minds which regard nature from without but within nature itself, because these human beings are phases of nature. In other words the doctrine is behavioristic not only in a psychological sense but also in a metaphysical sense—using metaphysics as Professor Dewey has undertaken to present it in "Experience and Nature." This implies in particular that the so-called triadic relation holds between organisms and nature; that nature exists in varied aspects in its relation to the organisms of which it is patient, in Professor Whitehead's phrase. I do not agree with what I take to be Professor Broad's interpretation of Professor Whitehead's doctrine, that the so-called sensa exist in the immediate proximity of the organisms and are, as it were, projected into an absolute space-time of events. I see no reason for questioning the adjectives of things as actually qualifying them, where they are in experience in their relations with organisms endowed with sense processes. The crux of such a doctrine, of course, lies in the common world. There are dark hints of a theory of this common world in Professor Whitehead's publications, in exiguous phrases and appended notes. I presume it has been given in his Gifford Lectures, and will be accessible to us in their publication.

The logical extension of the view of nature existing in perspectives is that societies are organisms in Professor Whitehead's definition of an organism and that there is a common nature that is there in its relationship to such a social organism. The problem is then shifted to the nature of the experience of the members of these societies. For this experience is both private

and public. I have my own doctrine for this social character of experience which I have elsewhere presented[1] and at which I have hinted above. What it amounts to in a very summary formulation is that society exists in the social nature of its members, and the social nature of its members exists in their assumption of the organized attitudes of others who are involved with them in cooperative activities, and that this assumption of organized attitudes has arisen through communication. That is communication makes participation possible, to use Professor Dewey's phrase. There are then aspects of nature which exist only for each organism. For example, the experience of what goes on within a man's body is accessible only to himself. He can share his experiences of his own headaches with others only by appealing to private experiences of their own, but he does immediately put himself in the place of others in their common undertakings in the world and observes things spatio-temporally and meaningfully as they observe them. Answering to these common experiences there lies before them a common world, the world of the group. This common world is continually breaking down. Problems arise in it and demand solution. They appear as the exceptions to which I have referred above. The exceptions appear first of all in the experience of individuals and while they have the form of common experiences they run counter to the structure of the common world. The experience of the individual is precious because it preserves these exceptions. But the individual preserves them in such form that others can experience them, that they may become common experience. They are the data of science. If they have been put in the form of common experiences, the task appears of reconstructing the common world so that they may have their place and become instances instead of exceptions. Now the only test that can be offered of the truth of the reconstruction lies in the fitting in of the hypothesis into the common world in so far as it is not affected by the problem, which appeared in the exception.

[1] *Journal of Philosophy*, XIX, 157–163.

If experience must accord with a reality beyond itself, the test of truth will be a correspondence of its structure with the structure of external reality; or if reality is an absolute of which experience is an incomplete phase, then truth will lie in the congruence of the process of experience with that of the absolute. In both these alternatives, experience itself constitutes an epistemological problem of which other problems are only separate instances, a problem which is given in the assumed cognitive reference of experience to something beyond itself. In the doctrine I have undertaken to present, experience is not itself a problem. It is simply there. The problems arise within it. The criterion of truth does not then transcend experience, but simply regards the conditions of ongoing experience which has become problematic through the inhibitions of the natural processes of men. The solution of the problem lies entirely within experience and is found in the resolution of the inhibitions. Furthermore, the rational solution of problems takes place through minds which have arisen in social evolution. The criterion, then, of the truth of the solutions will involve the aspect of nature that answers to the society which is the habitat of these minds. The criterion calls for the continuance of a common world. It excludes for example a possible irrational or arational aspect of reality. But it does not exclude the appearance of the novel, the emergent. I take it that this is the negative reflection of the propositional function, and the field of modern logical theory. Our experience can only be open to that which is novel if the forms are empty. This is another way of saying that the problem can appear anywhere in experience. The view of reality which belongs to this statement of the doctrine does in a considerable degree determine the theory of truth and its criterion.

In conclusion allow me to recur to rationalization. We rationalize when we so restate and interpret a new order of things that old habits and attitudes find objects to arouse and sustain them. The familiar illustration is the aesthetic conservation of outworn religious cults. As another illustration, I

suggested the conservation in Renaissance philosophy of the old central position of man in the universe by the resolution of the world into states of mind. Evidently the impelling but often unconscious motive is the salvation of the values which still attach to the old responses. Any successful formulation must excite consecrated emotional attitudes. Philosophically the salvation of mind replaced the salvation of the soul, but back of the epistemology lay the sense of the supreme value of human experience. I am entirely agreed that the conservation of the value of human experience lies as a liability upon philosophic doctrine, but I make bold to say that in the passage of time since Descartes, Spinoza, and Leibnitz the preservation of these values through the cognitive relation of mind to the universe has become more and more precarious. Let me offer as evidences such divergent findings as those of Bradley's *Appearance and Reality,* Bertrand Russell's *Religion of a Free Man,* and Santayana's *Doctrine of Essences.* In the dominant philosophic current since the Renaissance lies the implication of some structure of reality which the structure of thought undertakes to reflect or sets up as a postulate, a structure, whatever it may be, that has the immutability and irrevocability of the past. And it is in this immutable and irrevocable order that philosophies have sought the firm foundation of their values, in so far as they have not despaired of them. Thus they have rationalized new orders to find in them the implications of the old. Science, in the meantime, in its practice, has cheerfully not to say joyfully scrapped its old structures and only preserved its method. Of course science has never accepted the responsibility for the preservation of values, though an honorable exception should be made in recognizing the responsibility which science is taking upon itself for the physiological and psychical health of the community. Philosophy, on the other hand, in its conspectus of reality and in its ethical doctrine, can never evade the responsibility for the values of the community.

Now I take it that the most distinctive mark of the Pragmatic movement is the frank acceptance of actual ongoing ex-

perience, experimentally controlled, as the standpoint from which to interpret the past and inticipate the future. So far as I can see this acceptance must recognize as ruled out any absolute order within which is to be placed a final concatenation of events past, present, and future. For in such an ultimate framework there is no place for an emergent future with its implicated new past, nor is there any allowance for different orders of different aspects of the universe. The problem, then, which Pragmatism faces is the maintenance of values by methods, in the place of structure. It is not the revival of emotional response by the assimilation of the new to the old, upon which we can depend. On the contrary it becomes necessary to recast the old as that which leads up to the new situation. This we readily carry out in our rapidly changing accounts of the past of the physical world and of its inhabitants. Can we as readily apply it to the pressing problems of social reconstruction with their profound implications of the values that are involved in possession, in national and personal rights, in the family and in the church?

THE NATURE OF SCIENTIFIC TRUTH

BY

V. F. LENZEN

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In order to describe any subject-matter it is necessary to assume as undefined certain concepts in terms of which other concepts are explained. I therefore assume that we have a concept of a real world consisting of things and other entities. The concept of reality connotes a union of characters and the concept of real thing connotes a specific union of characters. The concept of reality is empirical in the sense that there are empirical criteria which may be applied to determine whether a thing is real or not. Such criteria are used almost without reflection in daily life and in the laboratory. Thus at the beginning of an experiment the physicist assumes that his laboratory table, meter-rods, standard weights, glass tubes, etc., are real things. The science of physics does not formulate the criteria by which these assumptions can be justified. In addition to its empirical meaning there is, as we shall see, an ultimate aspect to the concept of reality.

Knowledge is recorded in concepts and propositions which express the character of some aspect of reality. The concept of truth appertains to those propositions which are the object of belief. Thus propositions which are believed are said to be true. The term "truth," however, is employed in two senses. In the first place truth is conceived of as a relation between a true proposition and reality. For example, the true proposition may correspond to reality. But the term "truth" is also applied to true propositions. One expresses through true propositions the truth about the nature of the world. Thus the concept of truth may indicate the content of a proposition or its

relation to reality. In this essay I shall analyze the knowledge of the physical characters of reality with a view to an account of the nature of truth in physical science. In accordance with the dual meaning of the concept of truth I shall consider the content of true knowledge of reality and the relation of such knowledge to reality. Thus the problem of the nature of truth in physical science is twofold: it is one of physics and metaphysics, and of theory of knowledge.

The real world consists of a multiplicity of entities with various characters. I shall draw a fundamental distinction between the empirical and metaphysical characters of an entity. The empirical characters are those given in, or tested by, sensible experience. By metaphysical characters I shall mean those which determine the ultimate status of the entity in reality. A book has empirical characters such as color, extension, inertia, etc., which are attributed to it on the basis of criteria given in sensible experience. But the book also has metaphysical characters which define its relation to the totality of reality. Thus the real thing which we call a book may be a self-contained subjective experience, or it may represent a thing-in-itself. There are generally accepted criteria which enable one to determine whether an entity has a given empirical character, but the principles determining the assignment of metaphysical characters are not so definite. In view of the preceding distinction we must distinguish between empirical and metaphysical truth. The primary topic of this essay is the nature of empirical truth in physical science, but I shall also discuss briefly the metaphysical implications of physics.

The field of empirical truth is constituted by the characters which are given in, or determined by, sensible experience. The empirical characters of a body may be described in various ways: for example, as esthetic, instrumental, and scientific. Or they may be classified as primary and secondary. However, I am not interested in giving a complete account of characters; I wish merely to call attention to the fact that physical characters constitute only a part of the empirical aspect of reality. A

character is scientific if it stands in general relations with other characters. Physical characters may be described as a subclass of scientific characters, or more precisely as primary qualities. The definition of physical characters is that they are measurable. Planck has formulated the criterion that physical reality is that which is measurable. Our investigation into the nature of scientific truth will be restricted to the propositions which express relations between physical characters.

The purpose of the previous discussion was to emphasize the fact that physical characters constitute only a part of the aspects of reality. A real entity consists of more than its physical or measurable characters. In particular, it may have a moral or esthetic significance which is ignored in the study of its physical characters. If an entity is investigated solely for its physical characters it will be called a physical object. Thus the world of physical objects constitutes an abstraction from the totality of reality.

The topic of this essay is the nature of truth in physical science. We have seen that one must distinguish between truth as the content of a proposition and truth as a relation of the proposition to reality. Now the nature of the content is correlated with the type of relation which constitutes truth. Our first task then will be to give an analysis of content.

I propose the following provisional threefold classification. Physical characters and processes may be classified as large-scale, fine-scale, and schematic. The distinction may be called that between macroscopic, microscopic, and schematic phenomena. Large-scale, or macroscopic, characters and processes are those which are directly observable or are defined in terms of the directly observable. The motion of a ball down an inclined plane, the oscillation of a clock pendulum, the collision of two billiard balls, are examples of large-scale or macroscopic processes. Atomistic theories in physics conceive of ordinary bodies as constituted of very small particles. Fine-scale, or microscopic, characters and processes are those pertaining to the elementary particles. From my point of view the elements of a microscopic

theory are in principle observable, they could be observed if the process of analysis were carried far enough. Schematic characters and processes are those conceived of as correlated with observable characters for the purpose of systematic representation. I consider an ether wave as correlate of the sensation of light to be a schematic process. We may add a fourth class in which there is a union of the microscopic and schematic. Such processes are exemplified in the quantum theory. Corresponding to the three concepts of macroscopic, microscopic, and schematic are the three methods which may be called the phenomenological, the atomistic, and the conceptual methods. The three types of character and process give rise to different types of physical theory.

A macroscopic theory is exemplified by classical mechanics, the theory of the equilibrium and motion of bodies acted upon by forces. The concepts are distance, time, velocity, acceleration, mass, momentum, force, kinetic energy, potential energy, etc. Some of these concepts can be chosen as fundamental, in terms of which the others are defined. But all of them are exemplified in observable bodies, as is illustrated by Galileo's classical experiments on the motion of falling bodies. From the definitions of velocity and acceleration it follows that if a body starts from rest and moves with constant acceleration the distance passed over in time t will be $s = \frac{1}{2} at^2$. Galileo rolled a ball down an inclined plane and found that the measured distances and times satisfied this law. Another example of a macroscopic theory is classical thermodynamics. In this theory one employs the concepts of temperature, quantity of heat, volume, pressure, etc. A relation which belongs to classical thermodynamics is the law relating the pressure, volume, and temperature of a gas, $PV = RT$. P, V, and T are all directly measurable. Again, the electromagnetic theory in the form given to it by Maxwell and Hertz is an example of a macroscopic theory; it employs the concepts of electric and magnetic field, electric current, etc.

The great advantage of macroscopic theories is their solid basis in experience. But physicists have never been satisfied with the phenomenological method. The attempt has been made to derive macroscopic quantities from the action of microscopic quantities. H. A. Lorentz has characterized this motive as follows:

> It is necessary for us to yield to the desire to enter more into the detail, into the mechanism of phenomena. And it is this need of certain minds, less careful to limit science to the general, external, and directly utilizable characters of phenomena, more impelled to discover, by their fine-scale analysis, the common character of apparently dissimilar phenomena,—it is this need which has created molecular theories.

The classical illustration of a microscopic theory is the kinetic theory of gases. According to this theory a gas consists of molecules which move with high velocities and collide with each other and the walls of the container. The macroscopic pressure of a gas is the average resultant per unit area of the forces exerted by the molecules in collisions with the walls of the containing vessel. The temperature of a gas is related to the average kinetic energy per degree of freedom of the molecules. Upon these assumptions one can deduce the general gas law $PV = RT$. In the theory of solids a crystal is conceived of as a lattice of electrified particles which are in equilibrium under the action of the forces of attraction and repulsion between the particles. On this assumption one can calculate the elastic properties of crystals which are investigated in the macroscopic theory of elasticity. In the electron theory the macroscopic electric and magnetic fields are derived from the fields of the elementary particles.

The third type of theory is the schematic theory. A schematic theory is one in which certain processes are conceived of as correlated with certain observable effects. I consider the theory of light as a wave motion in the ether to be a schematic theory. A wave motion in the ether is correlated with the sensible character of light. Now it seems to me that the concept of light as a wave motion has a different status from that

of matter as composed of molecules. A molecule is like an ordinary body only smaller. If we pursue our analysis far enough we might hope to see, or otherwise directly experience, a molecule. But in the ether theory of light it was not proposed that we could experience the ether vibration if we carried the analysis far enough. Especially we could not hope to see the vibrations of light. The vibrations were correlated with the awareness of certain characteristic sensations of light, and it would be a contradiction to conceive of the possibility of a visual perception of the vibration itself. The ether was postulated to have properties which could not be detected by other types of awareness. Thus the ether seems to have been a substance which was invented to be a correlate and without the properties which would make it observable. Such a schematic theory lends support to the view that scientific concepts are convenient fictions.

A schematic theory may also be combined with a microscopic theory. Such an example is offered by Bohr's quantum theory of atomic structure and light emission. The hydrogen atom is supposed to consist of an electron revolving about a positive nucleus. The electron may revolve in one of a discrete series of quantized orbits in which state the atom possesses a certain energy. This is the microscopic part of the theory. Light is emitted during a transition from a state of higher energy to one of lower energy. The frequency of the emitted light is given by $h\nu = E_1 - E_2$. Thus we have a schematic process, the emission of radiation, correlated with a change in a microscopic process. That it is correlation and not an analysis is indicated by the fact that the equation $h\nu = E_1 - E_2$ is spoken of as formal.

The difference between microscopic and schematic theories may be further explained in terms of the distinction between propositions of analysis and propositions of correlation. A microscopic theory contains propositions of analysis. Thus in the kinetic theory of gases an analysis of the quantity pressure is given by the proposition that the pressure of a gas is the

average resultant of molecular forces. The essential point is that the force exerted by a molecule is defined mechanically in the same way as the macroscopic force exerted by the gas. In the proposition, pressure is the average resultant of molecular forces, the "is" expresses identity. The proposition that heat is molecular energy expresses an analysis in terms of mechanical quantities of a quantity measured in heat units. In this case the "is" also expresses identity. A microscopic theory also supplies correlations, for example, the sensible heat of a body is correlated with the average molecular energy.

The propositions of a schematic theory present correlations. Thus the statement that light is a wave motion expresses a correlation between the content of light sensation and a motion in a medium. The "is" expresses correlation and not identity.

It has been contended that all microscopic and schematic concepts are fictions. The argument is plausible for schematic concepts, but not for the microscopic ones. Professor Bridgman states that light as a thing traveling must be recognized to be a pure invention. On the other hand, it is generally conceded that the experiments on the Brownian movement prove the reality of molecules. For the fine-scale fluctuations derived from the theory have been observed. I hazard the opinion that the measurement of light pressure performs a similar service for a theory of light. However, I believe that it is instructive to distinguish between microscopic and schematic concepts.

Einstein has divided physical theories into theories of principle and constructive theories. Theories of principle are macroscopic, and constructive theories are microscopic or schematic.

The distinction between macroscopic, microscopic, and schematic may be made the basis for a discussion of description and explanation in physics. Kirchhoff declared that the aim of mechanics was to describe the motions in nature as simply and completely as possible. It would thus appear that macroscopic theories are restricted to description. However, the term "explanation" is applicable in the investigation of macroscopic

phenomena. In a macroscopic theory a process is said to be explained if it is exhibited as an instance of the principles. An example from mechanics is the following: If two equal billiard balls collide in central impact their velocities are interchanged. Why? The explanation consists in deriving the result from the laws of conservation of momentum and of energy. Similarly in thermodynamics we explain why the specific heat of a gas at constant pressure is greater than the specific heat at constant volume by showing that this is an instance of the first law of thermodynamics. Thus there is explanation in terms of macroscopic theories.

However, the term "explanation" seems to be more appropriate for microscopic and schematic theories. Thus we may have an explanation of a macroscopic quantity by its analysis into microscopic quantities or through its correlation with microscopic or schematic quantities. Furthermore, sensible data are explained by correlation with schematic quantities.

To summarize the discussion thus far: in our survey of the content of truth in physical science we have been led to distinguish between macroscopic, microscopic, and schematic characters and processes.

I shall now consider the knowledge of physical characters and processes. In accordance with the different types of character there are different ways of knowing in physical science.

In this account of the methods of knowing physical characters, it will be useful to distinguish between knowledge by acquaintance and knowledge by description. In knowledge by acquaintance one has direct awareness of some datum. Thus if I am aware of a red patch I am acquainted with an instance of redness. Again, one has knowledge by acquaintance of sounds, sensible heat, etc. I can explain knowledge by acquaintance only by giving such elementary examples. I would further emphasize the fact that any reference to sense organs and the science of physiology is out of place in this discussion of the foundations of knowledge.

Now when one observes the red patch one may also experience it as extended. Extension is in some sense an elementary character of the given. I am not proposing that we have an immediate experience of a complete three-dimensional space. But whatever the origin of the concept of space, it seems to be based upon some character with which we are acquainted. I further assume that we have a direct acquaintance with an interval of time. Extension and interval of time are fundamental physical characters. There are other physical characters such as inertia, intensity of heat, electrification, etc. Are we acquainted with characters of this type? I shall not answer this question now, but shall merely remark that macroscopic physics is based upon the knowledge by acquaintance of at least some physical characters.

The basic criterion of truth is correspondence of a proposition with reality. In knowledge by acquaintance correspondence of empirical truth with reality is tested. The concept of correspondence may be explained by considering a simple example. From acquaintance with red objects one obtains the concept of redness and may employ it in propositions. Thus one may assert the proposition, the book which I hold in my hand is red. In knowledge by acquaintance with the characters of the book I am able to determine whether or not the book is red. The beginning of all knowledge is acquaintance with characters given in awareness. In macroscopic physics, which is the study of the physical characters of observable bodies, we assume that the fundamental concepts are based upon knowledge by acquaintance of physical characters. Thus the propositions of macroscopic physics are subject to a correspondence test of truth.

The second kind of knowledge is knowledge by description. In this sort of knowledge we know characters and objects with which we are not acquainted by means of propositions about the characters and objects. The test of the truth of such propositions is their coherence with propositions which can be tested for correspondence by acquaintance. Knowledge by description occurs in macroscopic theories, but the primary

illustration of this type of knowledge is had in a microscopic theory. The fundamental entities of a microscopic theory, such as the kinetic theory of gases, are known by description. The general characters ascribed to the molecules are derived from macroscopic physics, but it is a new assumption that microscopic entities having these characters exist. From the assumptions one deduces consequences which are then compared with macroscopic characters known by acquaintance. Thus in elementary kinetic theory one assumes that the molecules are elastic spheres which are subject to the laws of classical mechanics. One assumes that macroscopic pressure is the average resultant of molecular forces and that macroscopic temperature is correlated with the average kinetic energy per degree of freedom of the molecules. One then deduces the general gas law which corresponds approximately to experience. Thus in microscopic theories the test by correspondence is supplemented by coherence.

I have also introduced the concept of schematic theory. In this case we have knowledge by description which may be described as knowledge by correlation. In a schematic theory one correlates a schematic process with an observable datum. Thus in the theory that light is a wave motion in the ether the intensity of sensible light was correlated with the square of the amplitude of the ether vibration. The theory was tested by comparing the intensity calculated from the wave theory with the intensity of the correlated observable datum. I shall call this method the test by parallelism plus correspondence. To summarize: A macroscopic theory is tested by acquaintance for correspondence, a microscopic theory is tested by coherence plus correspondence, a schematic theory is tested by parallelism plus correspondence.

The foregoing discussion has revealed the fundamental importance of the concept of correspondence. I propose to analyze in detail this concept as it occurs in macroscopic physics.

The problem of macroscopic physics is to study the physical characters of large-scale phenomena. This involves the discovery of characters, the analysis or construction of characters,

measurement, and the determination of functional relations between the measure of characters.

Knowledge by acquaintance is the beginning of our knowledge of physical characters. I have already indicated that we have knowledge by acquaintance of extension and interval of time. I believe that bodies in motion have characters with which we are acquainted and which can be analyzed into the characters of extension and time-interval. But a precise discussion of this question is possible only after we have introduced the concept of measure. I wish particularly to discuss the knowledge of physical characters other than extension and time-interval. Since Newton it has been assumed in classical physics that there are characters which may be called specifically physical. Descartes had maintained that the essence of matter was extension. But the Cartesian point of view was opposed by Newton and Leibniz, and Newton constructed a system of natural philosophy in which inertia was the defining character of matter. In my discussion of the ways of knowing physical characters I shall begin with mechanics. In mechanics the defining property of matter is inertia. All material bodies manifest some character which is called inertia. Now, my problem is, have we a direct acquaintance with inertia? Is our knowledge of inertia like our knowledge of extension or redness? As a basis of discussion I quote the following passage from Professor Slate's *Principles of Mechanics.*

> The science of physics is concerned with certain properties of bodies. . . . . Within the boundaries of mechanics, as a subdivision of physics, there is at least one such property, fundamental for our immediate purpose. It is a matter of universal experience that bodies are brought into motion and stopped, relatively to the earth's surface, with widely varying degrees of difficulty. Such differences seem to be resident in the bodies themselves, and inseparable from them. The conception of this property is gained individually, and was in all probability originally derived, in connection with muscular effort. . . . . An element derived from observed phenomena is here introduced into Mechanics, in addition to those fundamentally assumed by the abstracter sciences, Geometry and Kinematics. This element differentiates bodies among which the latter sciences do not need to distinguish. It may be regarded as affording a basis for ideas of inertia and force.

With the help of such a description one acquires the concept of inertia. But it seems clear that we are not acquainted with inertia in the sense in which we are acquainted with redness, extension, sensible heat, etc. To be sure, it seems that we have direct acquaintance with inertia when we touch a body and start it in motion. But my interpretation of this experience is that it consists of sensations of effort. We would experience the same sensations in compressing a spring having no inertia. The character of inertia seems to be ascribed to a body in order to correlate certain experiments on the body. We are acquainted with the phenomena which take place in the experiments, but we do not seem to be acquainted with the character ascribed to the body. The late introduction of the concept of inertia by Newton further indicates that inertia is not a character with which we are directly acquainted.

Bodies may possess other characters, such as electrification. If a rod of amber is rubbed on a dry cloth it is said to be electrified, or charged with electricity. If the electrified rod of amber is brought near small bits of paper it will attract them. It is in virtue of such experiments that we ascribe electrification to the amber. It is frequently said we do not perceive electricity directly, but know it through its effects. Thus the character of electrification is ascribed to bodies in order to correlate the experiments in which the action of the charge is observed. Even more clearly than in the case of inertia does it seem to be true that we do not have a direct acquaintance with electricity in the sense in which we are acquainted with redness.

My view is that the theories of classical physics are constructed with the aid of the concept of substance. Inertia is the character of material substance, electrification is the character of electrical substance. These substances are assumed to be real and to have characters with which we are not directly acquainted. It appears that we know the character of physical substance through correlation with observable phenomena. Material substance is an x such that x is related to phenomena

with which we are acquainted. The upshot of the discussion is that macroscopic physics, which we believed to be based upon direct acquaintance, is schematic physics. Indeed, as a result of my epistemological analysis, all classical physics is schematic. But, if the characters of physical substance are not knowable by acquaintance, how can they enter into a physical theory? The answer is, that we can measure the characters of substance.

The science of physics is based upon the operation of measurement. A character becomes physical when it can be measured, and the data of physics consist of the results of measurement. The laws of physics express general relations between numerical measures of characters. Thus Boyle's Law $PV = constant$ states that if the temperature of a gas is constant, the measure of the pressure multiplied by the measure of the volume is a constant. The symbols denote numbers, but numbers which refer to certain physical quantities. It is sometimes stated that the equation should be written

$$P\ (\frac{dyne}{cm.^2})\ V\ (cm.^3) = k\ (erg),$$

in order to indicate that it is a physical equation.

The measure of a character is a relation determined by comparing it with the similar character of some unit. A physical measure is called a physical quantity and is symbolized by a number and the name of the unit. Ultimately the unit must be embodied in some standard or measured in terms of a standard. Thus the length of a body is the measure of its extension, and is determined by the operation of comparing the body in respect to extension with a standard meter-rod. In the last analysis the operation consists of counting the number of times the standard meter-rod can be laid off on the body, or it consists of counting the number of equal meter-rods which can be placed end to end alongside the body. Physical quantities are exemplified by length, time, mass, temperature, electric charge, energy, etc. There are appropriate units for each kind of physical quantity.

A physical theory is a set of propositions, more specifically equations, stating relations between physical quantities. An equation of physics is true if it corresponds to measurements. From the epistemological standpoint there are two types of equation, equations which are true by definition and equations which express functional relations which are verified by measurement. For example, the equation which states that average speed is the distance passed over divided by the time is true by definition. In constructing the foundations of mechanics we can not expect to verify this equation, since we calculate speed by means of this definition. The equation $V = \frac{P\pi r^4}{8l\mu}$, which expresses the volume of fluid that flows out of a tube in unit time in terms of the difference of pressure at the two ends of the tube, the radius, the length, and the coefficient of viscosity, expresses a functional relation between these physical quantities which can be verified by measurements. Thus physical equations are definitions or functional relations. The presence of definitions indicates that in a physical theory some of the quantities are selected as fundamental and the others are defined in terms of them.

Having discussed relations between physical quantities I return to the question of units. We have seen that there are as many kinds of unit as there are kinds of quantity. In the systems of units employed in physics some of the units are chosen as fundamental and the others are defined in terms of them by means of the equations. The relations between the fundamental and derived units are described in the theory of dimensions.

But let us now consider the bearing of this discussion upon the concepts of the characters that are measured by the quantities. It appears to me that some writers look upon the dimensions of a physical quantity as its definition. This seems to me to fail to distinguish between definitions and functional relations. The definition of a quantity in terms of fundamental quantities constitutes an analysis of a concept. Thus average

speed is equal to the distance passed over divided by the time. I believe that we are acquainted with a character which is expressed by the concept of speed, and the character is made definite by such a quantitative definition. But a functional relation between two quantities does not furnish an analysis of one character in terms of the other. However, a derived unit may be defined in terms of fundamental units by means of a functional relation. When this is done the functional relation correlates the one character with the others. I further propose the view that the functional relation thus becomes true by definition. This is the way in which the concept of electric charge is introduced into physics. We are not acquainted with the character of electricity, but we ascribe to electrified bodies a character which is made precise by the functional relation which correlates the measure of the charge with mechanical forces. The intrinsic nature of the character is unknown, but its measure is defined by the functional relation. To summarize: The definitions of physical quantities present analyses of the characters in terms of fundamental characters. Some of the functional relations, those employed to define units, establish correlations between characters and directly measurable characters.

Physical measures must be expressed in terms of some unit and the fundamental units must be embodied in some constant standard. Thus the operation of measurement presupposes the constancy of certain characters of reality. The judgment that certain characters are constant is initially based upon a primitive recognition of constancy. A certain union of characters constitutes an object such as a desk. Day after day I look at the desk and recognize similarity with respect to extension. Such recognition of similarity of characters at different times is the basis of the concept of constancy. Constancy of measure is then fixed by a postulate. It is postulated that the length of the standard meter is one meter. The constancy of length of the standard meter is not definable with respect to something else. From an abstract point of view one may conceive of the variation of our standard, but it would not be physically sig-

nificant. The concept of an attribute with constant measure is the essence of Kant's category of substance. It is a priori in the sense that it can not be tested by experience. If we attempt to determine if the standard meter is constant by measuring it with another rod we undertake a self-contradictory operation. Thus the concept of substantial attribute having a constant measure is a fundamental physical concept. It arises as a conceptual crystallization out of qualitative judgments of similarity. It is a plausible metaphysical assumption that recognition of similarity is grounded in a self-identical substance.

In our analysis of the nature of measurement we have seen that fundamental characters and standards of measurement are selected. Definitions are constructed and measures of characters are defined by functional relations with known measures. In a word, there are conventions in science. The proposition that the length of the standard meter is one meter is true by definition or convention. The proposition that average speed is the distance passed over divided by the time is true by definition or convention. It is a convention that the melting point of ice is 0° C. Such conventions partly determine the content of the propositions of physics. Now it is clear that these conventions are based upon pragmatic tests, such as economy, simplicity, utility, etc. It thus appears that scientific truth is tested by pragmatic considerations. However, once the conventions have been decided upon, there are functional relations between the measures which are significantly true in the light of tests to which pragmatic considerations are irrelevant. Thus by conventions one determines the measures of volume, of pressure, and of temperature. Then the proposition that the product of pressure and volume of a gas is proportional to the temperature is true because it corresponds, within certain limits, to the experimental data. Once the conventions have been selected the test of true propositions is correspondence. Thus in any empirical science there is a union of convention and truth.

The function of convention in physical science may be illustrated by a discussion of the foundations of classical mechanics.

A much debated issue has been the question whether the second law of motion is a definition of force or an experimental truth. In constructing a system of mechanics one begins with definitions of the measures of length and time. One can then define velocity and acceleration. There is no general agreement, however, as to the proper method of introducing the concepts of force and mass. Historically the concept of force was developed before that of mass, and in the experience of the individual force is comprehended more readily than mass. Professor Huntington chooses the concept of force as fundamental, but other writers define force in terms of mass.

I shall first sketch a system which seems to be implicitly assumed in elementary instruction. Our first dynamical concept is that of force. The primitive content of the concept of force is obtained from our own exertions. We observe that when we exert a force bodies are set in motion or brought to rest. The concept of force is then generalized so as to include cases in which the motion of a body is changed without our efforts. From this point of view force is conceived of as an active agent or influence and is almost identical with cause. For physical purposes, however, the content of the concept of force is immaterial, the essential point is that we know how to measure it. For our present system I propose that force be defined by the convention that it is to be measured by weight. Unit force may be defined as the weight of a standard body at a standard locality. The next concept is that of mass. Suppose that we have a body resting on a smooth horizontal plane. If we exert a horizontal force on the body it begins to move. The greater the weight of the body the greater is the force required to produce the same acceleration. Yet the weight acts at right angles to the direction of motion and hence the acceleration of a body under the action of a given force depends upon some character which is different from weight but proportional to it. We thus introduce the concept of inertia and its measure mass is defined as proportional to weight. More specifically we define the ratio of two masses to be equal to the ratio of the weights at a given

point. With these definitions of force and mass it becomes an experimental fact that the force is proportional to the product of mass and acceleration, $F = kma$. In an experiment on the second law the student in the laboratory usually uses weights as forces and measures masses by the beam balance, the employment of which presupposes that the ratio of two masses is equal to the ratio of the weights of the bodies. From his measurements on acceleration the student therefore verifies the second law of motion. From the second law one can then deduce that the acceleration of gravity is constant.

But now I shall give another version of the subject. As before we have a measure of acceleration. Let us suppose that we have two bodies attached to the opposite ends of a stretched spring. We release the bodies, measure their accelerations, and find that the ratio of their accelerations is constant,

$$\frac{a_2}{a_1} = k$$

No matter what type of spring is used the ratio of the accelerations is always the same. We may write this

$$\frac{a_2}{a_1} = \frac{m_1}{m_2}$$

We perform experiments with (1) and (3), and write the result

$$\frac{a_3}{a_1} = \frac{m_1}{m_3}$$

Thus the bodies are found to have constant characters which are represented by m_1, m_2, m_3, etc. That is, we ascribe to each body a constant character which is fixed through the definition that the ratio of the masses is equal to the inverse ratio of the accelerations. The measure of force is then defined by the equation $F = ma$. Thus the second law of motion becomes a definition of force. It then becomes an experimental fact that this measure of force is proportional to the measure of force in terms of weight. We have $F_w = kF$, and hence $F_w = kma$. Thus if we measure force in terms of weight it is again experimentally true that $F_w = kma$.

The essential point in the preceding discussion is that in the first system the measures of force and mass are defined independently of the second law of motion, and the second law is an experimental truth. In the second system mass is defined independently of the second law, and the measure of force is defined through the second law. Thus the second law is a definition. In the first system the proposition that force is measured by weight is true by definition, in the second system this proposition is an experimental fact. In the first system the proposition that mass is proportional to weight is true by definition, in the second system the proposition is an experimental truth. Thus in changing from the first system to the second convention and experimental truth exchange places.

Thus in any scientific theory which is to be applied to experience there is a foundation of conventions. But once the conventions or definitions have been laid down there are functional relations between the measures which are significantly true, because they correspond to data. There is a choice as to what is to be convention and what is to be true. Pragmatic criteria assist in the determination of conventions, but are irrelevant to the test of truth.

I wish now to summarize the preceding discussion of the nature of truth in physical science. The problem of physics is presented by the physical characters of reality. Their defining mark is that they can be measured; the measures of characters are physical quantities which are exemplified by length, time, mass, electric charge, etc. Physical laws express general relations between physical quantities. In the last analysis the test of the truth of the propositions of physics is correspondence with the data. Some physical characters are constant, that is, have constant measures. In classical mechanics inertia was such a character and the mass of a body was constant. Later the concept of electric charge was made fundamental. In classical physics characters with constant measures were attributed to substances. Thus Kant's category of substance was a fundamental concept of classical physics. The characters of

macroscopic substance were measured directly, the characters of microscopic substance indirectly.

I come now to the final topic of this essay, the problem of the ultimate status of physical characters. I shall first consider the epistemological aspects of the problem. In the analysis of the knowledge of physical characters I came to the conclusion that we are acquainted only with extension and time. It does not seem to me that we have acquaintance with inertia, electrification, etc. Thus practically all physical characters are correlates of observable characters. My initial subdivision into macroscopic, microscopic, and schematic thus breaks down. In so far as physical theories are supposed to yield insight into the nature of reality they are schematic. Physical characters enter into physical theory through the relations of their measures to the measures of observable characters. Thus characters are defined by the statement: X is such that the measure of X satisfies the functional relation XRA, where A is an observable measure. On the assumption of the constancy of the measures of length and time one determines the constancy of the measures of other characters. Except for extension and time the intrinsic nature of physical characters is not accessible to experience and is not relevant to physical theory. In view of the constancy of measures the physicist assumes the existence of substances of some kind. The substance has taken various forms such as, material substance, electrical substance, energy, etc. The essential point is that physical substance is endowed with unobservable attributes. Traditional physics has been a physics of substance.

In recent years, however, a new type of theory has been projected, namely, a geometrical system of physics. From this point of view physical characters are geometrical characters of space-time. The new method was introduced by Einstein in his theory of gravitation. According to the Newtonian theory the planets would move in straight lines with uniform velocity if they were not acted upon by forces. They revolve in orbits about the sun because there is a force of attraction exerted by

the sun upon them. Einstein replaced the force of gravitation by a curvature of space-time. The curvature is related to the distribution of matter by the law of gravitation. Weyl and Eddington invented generalized geometries in order to correlate electromagnetic phenomena with geometrical characters of space-time. According to reports of Einstein's recent work he has made a notable contribution to the program of comprehending gravitational and electromagnetic phenomena in a unified geometrical system of physics. Thus alongside the physics of substance we have a geometrical physics.

In my opinion the geometrical system of physics is the form which should be the goal of physical theory. In the physics of substance the measures of unobservable physical characters are functionally related to the measures of observable characters. The functional relations are not definitions. In geometrical physics physical characters are defined in terms of the geometrical characters of space-time. Now I have shown that of the fundamental physical characters only extension and time are directly known in acquaintance. In geometrical physics all characters would be defined in terms of characters with which we are directly acquainted. Thus for epistemological reasons the geometrical system is to be preferred.

The conception of a geometrical system of physics was envisaged by Descartes. In his analysis of the concept of matter he concluded that the essence of matter was extension. For only of extension did he have a clear and distinct idea. Descartes thus discovered the epistemological basis for a geometrical theory of physics. But the accomplishment of this goal required the construction of a space-time geometry and the invention of several branches of mathematics. And so physics was developed upon the concept of material substance by Newton and his followers. In recent years, however, the mathematical technique has been developed which offers hope to the prospect of constructing a geometrical system. The present geometrical movement was initiated by the rational demand to express the laws of physics in an invariant form. But one

is led to conceive of the same goal by an epistemological analysis of the source of knowledge. However, the physics of the laboratory will always be guided by the concept of substance.

I shall conclude this essay with some observations upon the metaphysical aspects of the concept of physical substance. It seems to me that the working physicist is guided by two metaphysical assumptions. The first assumption is that physical substance exists. It is a further empirical fact that there are empirical criteria for measuring the characters of physical substance. It is tempting to say that the concept of substance is a fiction. But this is as dogmatic as the assertion that it is certain that an independent reality corresponds to the concept of substance. The second assumption is that there are relations between the characters of physical substance which render possible the discovery of functional relations between measures. The foregoing two assumptions express the content of Kant's categories of substance and causality.

From a metaphysical point of view one can raise the further question as to the ultimate nature of physical substance. But the intrinsic nature of physical substance does not enter into physical theory. The relation of physical substance to the totality of reality also falls outside of the field of the physicist. The use of a meter-rod in the operation of measurement is independent of any metaphysical theory; the meter-rod may be an idea in the mind of God, or an independent reality. One end of an idea may be made to coincide with the end of another idea, or one end of an independent reality may be brought into coincidence with the end of another independent reality. Physics cannot decide between idealism and realism.

If I may hazard a suggestion as to a suitable metaphysical theory as a basis for physics, I would offer, as a philosopher, the following. The world given in our experience is fragmentary in nature. There are presented to us characters which we correlate by the concepts of things. And we construct a universe which is never given in one total experience. Certain measurable characters are found or ascribed to reality and the

measures are related by definitions and functional relations in a mathematical system. The constant characters are attributed to substances, but for the most part these constant attributes are not the direct objects of knowledge by acquaintance. It seems reasonable to assume a view similar to that which Professor Loewenberg has set forth on a number of occasions. The system of knowledge is representative of something wider and deeper than the fragments given in experience. In the constant attributes of physical substance we have a reference to a more fundamental, unattainable reality. Of physical substance one can say that we assume that it is, we know how much it is, but we do not know what it is.

THE NATURE OF TRUTH IN TRANSFORMATION

BY

D. S. MACKAY

THE NATURE OF TRUTH IN TRANSFORMATION

D. S. MACKAY

The study of truth is pursued by a paradox and runs to the commonplace. The paradox is, as Bradley insisted, that "it is impossible to deal with truth apart from an examination of reality."[1] It is agreed that the truth of a judgment must be adequate to the reality which the judgment intends. Either we have to be content with describing mutilated fragments of truth, or else, if we claim to study its nature as a whole, we must be prepared to assert that in some sense we know reality as a whole. But in the latter case there seems to be no distinct aspect of reality which is the real nature of truth. So we take refuge in the commonplace that human knowledge is, after all, a finite affair and its specific truth falls short of the reality it seeks to comprehend.

It might be possible to dispense with this commonplace and still avoid the paradox if we began by asking, What is the specific situation in which truths are discovered and displayed? For truth, I suppose, may be as indigenous to human life as is health. Just as we seek the nature of health and sickness in those concrete situations where a living individual enjoys the one or suffers the other, so we might expect to find the nature of truth and error in the concrete situations where an individual's thinking goes right or goes wrong. Since life is growth in a changing environment, every concrete situation into which a living individual enters, must consist of a process or processes whose contents are continuously passing. Thus, if we look for the nature

[1] *Essays on Truth and Reality*, 310.

of truth in any process of human experience, it is difficult to understand how it can be exempt from this fluctuation. Yet there is a sense in which truth transcends any specific process in which it is achieved and sustained. The nature of truth in transformation does not consist in being transformed. The contrary view is a sophistry that has always carried its own refutation on the face of it. It is as absurd to say that the truth of a judgment comes to pass and transpires with the act of judging as it is to say that the law of gravitation itself gravitates or that the principle of evolution has itself evolved. No theory of knowledge, I believe, has ever literally entertained such a doctrine except in the minds of its opponents. Nevertheless, our knowledge is a progressive and cumulative enterprise. Beliefs undergo continual reconstruction, and we know the world as unceasing development and change. But no knowledge satisfies our intellectual demands or claims to be true in any exact sense unless its truth is permanent, inalienable, eternal . . . . and so forth. This is, so to speak, the very truism of truth.

Now, whatever ulterior character it may possess, it will be agreed that truth is displayed only in a situation that involves mind. And what is a situation involving mind? A final answer to such a question might possibly tell us all there is to tell about the nature of truth, *sub specie aeternitatis.* But my destination is not the Absolute, and I shall merely note what I take to be the implications of such a situation in a descriptive analysis. My plan of discussion is, first, to consider what is implied by the presence of mind in any specific situation; second, to analyze the type of situation, involving mind, with which the nature of truth is directly concerned—what I shall describe as a perceptual situation; finally, to define the nature of truth with respect to transformations within a perceptual situation.

I

We begin by asking how, in any particular instance, mind is discerned and identified. What indicates its presence in a book or a conversation, a scientific inquiry or a course of conduct? Primarily, I suppose, it is the ideas they contain and a certain logical order and coherence among the ideas. Mind is discovered in the adjustment of means to ends, in the investigation and interpreting of facts, in the constructing of ideals. A being who pursues such activities "has a mind," as we say. But the mind that inhabits a particular body is discerned only through the significant actions which that body performs. The possibility of perceiving, imagining, remembering, judging is not clarified by referring it to a mind as the agent. To say it is the mind that thinks and understands is no more illuminating than to say it is the vision that sees or the digestion that digests. When we hunt for the specific entity or subject that is the "knower," we find in the end only the various responses of an organism to its natural and social environment. Some of these are mental or "minded" in so far as they reveal significant intent and logical structure. But their mental character does not reside solely in the being that performs them. It is due rather to a type of structure implicated in all thinking activities. In short, mind is discovered as a universe of discourse within which experience becomes significant and intelligent. The individual "mind," studied in psychology and located in the body, is simply a name for all of the modes of behavior which participate in the universe of discourse. Thus discerned, mind is to be conceived primarily as a realm in which thinking goes on, not as a subject in which it inheres.[2]

A situation involving mind is such that present facts are significantly related to remote and absent facts through the

[2] Cf. Woodbridge, F. J. E., "Structure," *Jour. Philos.*, XIV, 25; and "Mind Discerned," *ibid.*, XVIII, 13; also *The Realm of Mind*, 45–65 *passim.*

mediation of ideas. Whenever the occurrence of one thing with its qualities suggests the possibility of anything else with its qualities, a logical system of connections is implicated. Mind as a realm of being is that system in its totality. But is there any conceivable situation in which some significant connection of things or events is not indicated? Even to assume such a negative state of affairs is to endow it with significance and thus to belie the assumption. We seem compelled to conclude that mind as a logical structure is coextensive with the totality of existence. Indeed, the failure of attempts to circumscribe the mind is notorious and it is perhaps the perennial task of philosophy to reaffirm the intelligibility of nature as a whole. It should be remarked, however, that this is a speculative ideal rather than a descriptive account of the realm of mind. The intelligibility of nature expresses, in the most general way, the consummation or objective of any and every intellectual pursuit. In our reflective thinking things suggest, imply, and lead on to other things by means of which they can be understood. But the character of the unexplored regions of nature is itself one of the ideal possibilities or meanings indicated in the explored regions. In the language of Aristotle, we may say that every situation involves mind potentially, but not every situation involves mind actively. "The soul is in a sense all that is: for everything is a possible object of perception or intelligence."[3] The significant connections between events might be likened to paths which thinking pursues and the structure of mind to their orientation. As there is an infinite number of possible paths through a wilderness, but only a few are actually tracked and charted, so nature has infinite meanings, only a few of which are actively pursued.

The *locus* of truth is a situation characterized by active not merely potential presence of mind. We do, to be sure, refer to affairs remote in space and time, which contain little if any concrete experience. It may be contended that even such affairs, since they can at least be denoted in discourse, are in

[3] *De Anima* III, 8.

the active possession of the mind. Nevertheless, the *being* of such prehistoric or interstellar events, what they significantly are, remains wholly abstract within the hypothetical constructions of the physical sciences. Such considerations do not lead us to an idealistic doctrine that there are no situations in which mind is not actively implicated or that nothing exists apart from cognitive relations. On the contrary, we are led to a realistic assertion of existences independent of mind. But no truth, subsistential or existential, can qualify events except as they enter into the active, intellectual operations of perception and judgment.

It is generally conceded that truth and falsity apply only to propositions, not to things or qualities, terms or relations apart from propositions. There are propositions, however, to which truth and falsity are irrelevant, such as poetic utterances or the propositions of pure mathematics. Yet these exhibit logical necessity and types of congruence which conform to the structure of discourse. Although non-existent, the objects of poetry, no less than those of mathematics, are realities in the realm of mind. They significantly are what they are within a limited universe of discourse. We should scarcely deem worth refuting Hume's wry remark that poets are liars by profession. Indeed, true and false statements can be made about non-existent objects, as when we say (to use James's example) that Ivanhoe did not *really* marry Rebecca, as Thackeray pretends. But the question of truth is adventitious to the context in which these characters have their being. In order to be true or false, a proposition must be a judgment, which I take to be the statement of a belief in the light of the grounds or reasons which support it. The element of belief is what distinguishes a truth-situation from others in which mind is actively involved. Now, all belief presupposes perception, or rather, belief is the prospective outcome of an act of perception. Proverbially, "seeing is believing," which should mean, I presume, that seeing is for the sake of believing. We may believe cautiously or hastily, judiciously or injudiciously, deliberately or impulsively, but in any event

we believe only what we have previously perceived. The object of belief contains more than is given in perception—notably in the case of religious faith. But what distinguishes an object of belief from objects regarded either as purely formal and schematic or as imaginary, is its essential dependence upon an act of perception. I proceed, therefore, to an analysis of perception.

II

The assertion that truth resides in a perceptual situation does not mean that it is located inside the brain or consciousness of the perceiver, nor does it mean that its nature is definable solely in terms of psychology. The situation in which perception occurs is no more internal to a perceiver than is the habitat of a species internal to any member of that species. An act of perception can be analyzed in terms of physical stimuli, physiological conditions, psychological development, or logical content. These are but different accounts of one and the same situation, not descriptions of independent sets of conditions that come together to produce a perception.

In the following analysis I shall emphasize three aspects of a perceptual situation which bear an important relation to the nature of truth. First, perception is a process in time—it has duration. The importance of the temporal aspect has not even yet, I think, been sufficiently recognized in theories of knowledge. For one thing, it compels us to abandon the notion of a transparent, instantaneous state of awareness through which fixed data present themselves without any alteration to a perceiving mind. The supposed "transparency" of thought pertains not to the apprehension of sense-data but to the esthetic intuition of their meaning. This kind of immediacy is an eventual fulfillment rather than an initial state of perception. Furthermore, to "take time seriously" in perception is to reject any attempt to separate perceptual from conceptual knowing. The latter is simply a subsequent refinement and discrimination

of meanings *within* the original perceptual situation. Reason is neither a system superimposed upon perception nor a set of forms in which it is moulded. It *is* the act of perception itself, sustained and prolonged in the reflective elaboration of its content. The duration of a perceptual situation may vary from the fraction of a second to a lifetime, according to the nature of the problem and the intellectual interest it arouses. As one problem is involved in and involves other problems, so we may say (borrowing Mr. Whitehead's terminology) that one perceptual situation "extends over" and is "extended over" by others.

A second aspect of a perceptual situation is its inferential character from beginning to end. It is not merely that perception contains inference: perception *is* inference. Now, an inference is a transaction between something given and something sought. For this reason I find it difficult to compare the process of perception to a pure flux, duration, or "stream of consciousness." In an act of perception there seem to be many diverse affairs going on, which are brought into a state of unity that they did not at first present. If we require some comprehensive term for these diverse affairs in perception, we can best designate them as *transformations*. For the concept of transformation implies both continuous process and complexity of structure, both "becoming" and "being," inseparably connected. It precludes the assumption that a complex organization can be evolved out of absolutely simple elements whether bare events, a pure flux, or simple sensations. As the complex growth of a plant presupposes equally complex conditions in seed and soil, so does the complex transformation of inference into judgment presuppose equally complex conditions in the earlier stages of perception. There are, to begin with, existences and circumstances whose presence is not questioned. These "outstanding" and "surrounding" conditions constitute a permanent background within which the problematic data appear. As Mr. Mead pointed out, every problematic situation involves conditions that are not themselves problematic; otherwise we should have

to suppose that problems are solved by problems *ad infinitum*. Are these conditions, then, merely "assumed"? If we mean by "assumption" any condition *for* thought whose presence is not in question, then the existences given in perception are "assumed." But if we mean what is ordinarily meant, a condition posited *by* thought for its own purposes, then these non-problematic features of perception are in no wise assumed. The existential foundations of belief are not themselves beliefs, nor are the existential conditions of inference themselves inferred. To illustrate: I perceive the distance I must extend my arm in order to reach a book on my desk. The space through which my arm must move is inferred. But the *existence* of my arm and the *existence* of that book in a common space is neither inferred nor assumed: in this situation they are conditions *sine qua non*, concerning which there can be no uncertainty. However, if everything in the existing conditions were of this nature, there would be nothing to elicit perception. What occasions perception—what makes us stop, look and listen—is an element of doubt and insecurity. If books were always placed near me in the same relative position, I should learn to reach for them habitually without perceiving their distance. Given some variation within the habitual arrangement, some novel and disturbing factor, however slight, and my response becomes attentive and perceptive. In practice it is difficult for us to distinguish between what is habitual, routine adjustment to our surroundings and what is actually perception. But experimental analysis leads us to suppose that even in the minimum perception there is a momentary shock, an initial "sensation" of uncertainty, a period of hesitation during which we search for appropriate clues leading to further action.

The process of inference consists in translating the initially problematic qualities of the situation into the meaning of other qualities through which the doubt can be resolved. It is a reconstruction of discrepant or confused details within the given situation through the suggested possibility of other details. If these suggestions do serve to harmonize and unify the data,

belief results. If they do not, they are rejected and the doubt persists while other clues are followed. The percipient agent responds not only to actual changes in existence but he responds to these changes as *signs* of other existences. This amounts to saying that later developments in a process of perception are present as meanings which direct the earlier developments. Thus, the whole situation has a teleological and volitional aspect. Selective organization of data and meanings within the process of inference is impelled by the initial doubt and directed toward eventual belief.

This leads me to dissent from the contention that judgmental truth and error differ in kind from perceptual truth and error. A judgment *is* a perception, sustained and clarified in discourse, and every perception is an incipient judgment. Thus, not only judgments but what we call "sense-perceptions" imply intellectual activities. The notion that inference has its origin in an immediate awareness of sense-data, stripped of all meaning, rests on a false abstraction. It is due to the inveterate habit of confusing the eventual outcome of thought with its antecedent conditions. The objective elements of a situation, which perception finally discloses, are assumed to have been somehow apprehended from the start. Since by definition these elements are not originally recognized in any intellectual form, it is supposed they must have been present all along in the guise of bare "sensations," "sense-data," or "sensa." Such an arbitrary substitution of later for earlier developments is as unwarranted as the old notion that a man grows out of a *homunculus,* in which all the mature characteristics are present in miniature. It is strange that we should find it so difficult to determine precisely what these supposed sense-data are, if they can be apprehended so simply and directly. Why should there be so much perplexity in deciding what is "objective" and what is "subjective," what is relative to the observer and what is not relative? Consider the perception of a patch of color: is it perhaps a mere "after-image" or does it indicate physical conditions external to the eye? and if so, what elements in the perception

are to be referred to these conditions and what elements have a psychological source? To what extent is this sense-quality subjective appearance or objective reality? Such questions as these can be asked and answered intelligibly only in terms of distinctions within the perceptual process itself. The occurrence of an experience, e.g., seeing-patch-of-color, is not in question, since it is just this that we propose to analyze. But analysis discloses features that vary with states of the percipient, others that vary as changes in the environment, and still others that continue unchanged through the process as a whole. These distinctions which a functional analysis of perception discovers are not distinctions given prior to the perceptual situation. They denote differences of logical import and objective reference that arise in the situation as it is developed and elaborated. In short, data and meaning are organically related within a specific process of inference. They stand respectively for the determinate and the determinable characters by means of which perception issues in belief.[4]

An act of perception, whether it be relatively direct or indirect, momentary or prolonged, involves intellectual selection and organization. Thus, everything given or sought is reminiscent of mind. There can be no perception of fact stripped of significance, since there is continuous interaction between changes in existing conditions and changes in the meanings they suggest. They participate in a common logical structure, so that any systematic connection of the data is one and the same as the systematic connection of the meanings. The problem here is not the possibility of correlating mental with physical events, or subjective with objective meanings. It is rather the problem

[4] "The data are in truth precisely that which is selected and set aside *as* present, as immediate. Thus they are *given* to *further* thought. But the selection has occurred in view of the need for thought, it is a listing of the capital in the way of the undisturbed, the undiscussed, which thought can count upon in this particular problem. Hence it is not strange that it has a peculiar fitness for thought's further work. Having been selected with precisely that end in view, the wonder would be if it were not so fitted. A man may coin counterfeit money for use upon others, but hardly with the intent of passing it off upon himself."—Dewey, *Essays in Experimental Logic,* 146.

of finding a place for the subjective or tentative meanings within the total object of systematic inference. What constitutes the *present* reality of any situation in which truth is involved is the significant transformation of the past into the future.

III

We have now to define the nature of truth in transformation. As we have seen, truth inheres in a special type of transformation, namely, a process in which events acquire meaning within a perceptual situation. Since every event is itself experienced as a process, we may say that knowledge is a creative transformation of transformations with a view to belief. Our problem is then to state the nature of truth in an on-going, temporal process, yet expressing permanent relations within such a process. How is it possible, in Locke's picturesque phrase, "to adjust a standing measure to a growing bulk"? I shall try to answer this question in the following way. The nature of truth is to be defined in terms of an *interaction* of existence and meaning. More precisely, it is the property of an interaction between physical patterns of transformations in existence and logical patterns of transformation in meaning. Under the term "physical patterns" I should include any uniform characters of nature discoverable by the methods of the existential sciences, whether on the organic or the inorganic levels. Under the term "logical patterns," I should include any systems of implication discoverable by the methods of the dialectical or non-existential sciences, i.e., by the analysis of mind. I shall first state what seem to be the principal factors of transformation in general, whether of existence or of meaning. Next I shall consider the kind of interaction to which truth pertains. Finally, I shall suggest a definition of the nature of truth.

1. My contention is that anything we may undertake to investigate and describe consists in a process of transformation. "Nature," "World," "Universe," are collective names for all

actual and possible transformations. Thus we speak of the transformation of electrical energy into visible light, of heat into mechanical work, of a seed or germ into a living organism, of crude ore into an industrial product, of sounds into musical rhythm and melody, of human impulses into personal character, of individual interests into social institutions. Now, in every process, whatever its type or level, four principal factors are involved. First, the transformation of anything from one state into another is subject to certain limiting conditions: it conforms to a *structure*. Second, within these limits every process exhibits a certain range of variability: it occupies a *field*. Third, the actual changes within the field of any transformation occur in serial order, correlated according to the structure of the transformation as a whole: these serial correlations of changes are its *functions*. Fourth, every transformation is change into some specific entity—"that" is transformed into "this"—so that tendencies in the previous stages of development take shape in some concrete, present affair: there is a *concretion*, whether as existence or as idea. In saying that structure, field, function, and concretion represent the fundamental factors in transformation, I do not mean that they are circumscribed by the spatio-temporal boundaries of any particular process. One type of structure, e.g., that expressed in the laws of electrodynamics, controls many types of transformation, and a single process of transformation may conform to several types of structure. Neither is the field of transformation restricted to the immediate vicinity of its occurrence. Radiation of light is deployed over a whole gravitational and electromagnetic field as its medium of transformation. A similar range of structure and field on a different level is involved in the growth of living organisms and the higher forms of social organization. These exhibit patterns of action and a milieu which transcend the particular events in their histories. Pursuing such considerations, we are led ultimately to something like Mr. Boodin's conception of cosmic fields and interactions.

> Nothing moves in isolation. Everything moves in fields controlled, in the last analysis, by the total fields. . . . . All matter in all its types and stages of evolution,—inorganic matter, organic matter, minded matter,—radiates typical energy patterns, expressing not only the intensity of the structures from which they originate but their unique organization, just as within the control of the organism neural messengers from the various centres of the nervous system and chemical messengers from the various glands carry not only a certain quantity of energy but formative patterns from their sources to various parts of the organism.[5]

From this standpoint, we can conceive of an interaction between "energy-patterns" at different levels of development, whereby the structure of a higher level controls the organization of matter at a lower level, while the latter imposes material limitations upon the transformations at higher levels. If we consider next the functional factor, we shall find a similar interpenetration and overlapping of transformations. In the schematic, mathematical sense, functions express common ratios between the values of variables in different series. In the biological sense, they represent the ways in which a series of changes in an organism incorporates and uses a series of changes in the environment. "They are things done *by* the environment by means of organic structures or acquired dispositions."[6] Finally, the concretions or finished products in one process become parts of the unfinished, indeterminate phases of transformation in the field of a more inclusive process, e.g., an individual cell as part of a still undeveloped organ in a growing organism. Thus, there is interaction between different transformations at different levels with respect to structure, field, function, and their concretions.

2. Truth is in the nature of an interaction between transformations in existence and transformations in the realm of meaning and purpose. It is, as I have suggested, the principle of the significant transformation of transformations. One of the outstanding difficulties in theories of knowledge has been due to the assumption that an interaction between existence

[5] Boodin, J. E., *Cosmic Evolution,* 115, 119.

[6] Dewey, J., *Human Nature and Conduct,* 14–15.

and meaning, if it could ever occur, must consist in a direct, face-to-face encounter. It is supposed that a mind is somehow confronted with a reality which is to be faithfully disclosed and registered. In other words, a process in thought and a process in external existence are hypostatized so that, as Mr. Hobhouse puts it,

> we have the problem of interaction between two distinct and separate systems, each with laws of its own. If interaction is admitted, we have the conception of body as a purely mechanical system, whose operations at a certain point come plumply to an end, while at another point they as plumply begin, the intervening stage being filled by actions within the other system. . . . . Thus the contradiction of a purely mechanical system which does not act mechanically is balanced by the contradiction of a non-mechanical system which does act mechanically.[7]

An escape from the dilemma is then sought through some form of parallelism or through a doctrine of "internal relations" in which existence gets identified with the order of mind. The difficulty, as I see it, lies in the conception of interaction as an opposition instead of a communication between mind and existence. There is no need to suppose that all interaction must consist in an encounter between two mutually exclusive entities, whose action and reaction are equal but opposite. The active relation between thought and existence is analogous rather to the interaction between the plan and construction of a building, if we suppose that the former also undergoes reconstruction as the latter progresses. There is mutual organization of activities in the sharing of a common purpose. When we look at the enterprise of knowledge in the light of human art and industry, we are quit of the troublesome notion that its truth must consist in duplicating or resembling reality. Changes in thought are assimilated to changes in what is given for thought because both participate in the same problematic situation and are directed toward a common end. Indeed, this is, as we have seen, precisely what characterizes a perceptual situation: remote and externally related events are brought into communication and

[7] Hobhouse, L. T., *Development and Purpose*, ed. 2, 402 note.

acquire meaning in a conative or volitional process leading from uncertainty to belief.

In this interaction of thought and its given material there occurs an active exchange among all of the four factors of transformation, i.e., between structure, function, field, concretion of existential processes and the correlative factors on the level of mind. In the first place, the inclusive field of transformation is a community. By this I mean an association of customary attitudes and interests common to a group. This social medium constitutes the wider context within which the fields of mechanical and organic activities are explored. It should be emphasized that this social context is the field of perception and interpretation within which selected fields of past or future events are investigated. It is not suggested that these events themselves are characterized as social attitudes and interests. When a geologist studies the course of a glacial action in the Pleistocene age, it is obvious that the object of his investigation is not a state of belief in his own generation. But the *field* of this geologic process in the past constitutes an integral part of the whole perceptual field encompassed by present experience. It is this wider field that is characterized as a community. The grooves and moraines, the deposits of boulders and clay, and other evidence, indicate the remote glacial action by virtue of a social fund of knowledge through which the present records are interpreted. In this sense, then, the field of a process is said to participate in the organized experience of a community.

The knowledge of any process within this social nexus implies its further transformation into the symbols of communication. Knowing anything is saying what it is, and that means a translation of its existence into a system of signs: gestures, words, numbers, pointer-readings, and the rest. It is only through their elaboration that ideas can be identified and made clear. The growth of meaning in beliefs and in conduct consists in an active exchange between given facts and their symbols. There is a twofold interaction, whereby the structure of changes in existence is translated into the functions of thought, while the

functions of thought are translated into the structure of changes in existence. To put it more plainly, the concepts or standard meanings, by which we interpret given facts, function as significant patterns in thought. These patterns, which are symbolic groupings and vicarious enactments of experience, express habitual attitudes in which the stable features of the environment have been embodied. In this way, the structure of things determines the functions of thought, and the "alphabet of Nature" is translated into the symbols of discourse. These functions, in turn, so far as they are carried out effectively in overt action, exercise control over changes in existence. In some degree, then, they interact creatively with the structure of things. Such interaction of meaning and existence presents problems of truth and error in more than an academic sense. Given the sheltered, highly artificial surroundings of a civilized society, the chances are that without deliberate correction our habitual attitudes will embody less that is permanent and dependable in the environment and more that is contingent and incidental. The functions of thought may then become, as Mr. Dewey sharply describes it, "subject to all kinds of aberrations," such as

> carefully cultivated and artificially protected fantasies of consolation and compensation; rigidly stereotyped beliefs not submitted to objective tests; habits of learned ignorance or systematized ignorings of concrete relationships; organized fanaticisms; dogmatic traditions which socially are harshly intolerant and which intellectually are institutionalized paranoic systems; idealizations which instead of being immediate enjoyments of meanings, cut man off from nature and his fellows.[8]

Beliefs are false to the extent that they fail to harmonize the conflicting elements in experience and through that failure become additional sources of confusion and uncertainty in the life of a community. They are false in their tendency to hinder instead of promoting the organization of intelligence, the enhancement of meaning, and the extension of practical control in human affairs. A true belief is one that rests on adequate evidence and satisfies the specific requirements for intelligence,

[8] *Experience and Nature,* 302.

whatever the process of doubt and inference it has brought to a conclusion. But what is the criterion by which its adequacy and its degree of intelligence is determined? It would be rash, in the light of Mr. Loewenberg's analysis, to give answer in any single formula. Or rather, I should agree that the truth of a belief has each and all of the "prepositional" references which the traditional theories have severally emphasized and suppressed. The criterion of truth equally consists in its leading on to intended consequences, in its coherence with other truths, in its intrinsic certainty, and in its correspondence with fact. Considering the history of the several theories, I see no reason for doubting that scientific progress will develop new methods of clarifying and testing knowledge, followed by further philosophical theories of truth and even additional fallacies of "suppressed prepositions." As I understand it, this is another way of saying that truth, as an interaction and communication between changes in existence and changes in meaning, is too complex an affair to be defined under any single criterion. Precisely how the structure of transformations in existence is implicated in the functions of discourse and how the functions of things are enmeshed in the significant structure of discourse; to what extent the field of organized experience in a community does embrace the various fields of physical events; and in what respects the essential and individualized meanings of our knowledge do characterize "concretions in existence"—these are questions that can be settled only by the issue of specific inquiries. Nevertheless, such considerations still leave the intrinsic nature of truth undefined. My inference from Mr. Loewenberg's discussion is not that the nature of truth itself is "prepositional," but the nature of any theory of truth. The moral is that any attempt to define a criterion of truth should take account of the complex relations involved in the actual methods by which truths are ascertained and established.

To sum up: All objects of perception and judgment are objects in transformation. Thought is a creative process of communication through which changing events are transformed

into meanings, i.e., ideal possibilities of further experience. When such significant transformations involve judgments or beliefs, and consequently the distinction between truth and falsity, their development presupposes a perceptual situation. The field of perception is characterized by the shared and funded experience of a community. But within that field there is genuine growth of knowledge in so far as there is active exchange between the structure and functions of existences and the structure and functions of thought. Intellectual progress, whether in its individual or social aspects, consists in a deepening and widening of meanings, together with increasing control. Knowledge does not go on merely in terms of its own ideas. It presupposes particular doubts and problems with their given complexity of conditions out of which ideas are developed. It is in the process of unifying and harmonizing the discrepant data, and thus constructing verifiable beliefs, that knowledge is consummated.

3. The nature of truth is now to be defined as the *measure* of values in a process of inference leading to belief. I mean by this that the truth of the belief or supposed form of knowledge, in which the process culminates, is a constant proportion among the variables selected for the purposes of a given problem. The variables, as data and as meanings, are discriminated, compared, and estimated on the basis of the non-problematic features of the situation and with a view to the reconstruction of its problematic features. Thus, in the course of inference, facts and their suggested possibilities assume comparative values for the organization of the process as a whole. Objects get determined as to quantity and quality. They are estimated to be relatively near or far, larger or smaller, moving or at rest; to be excessive or defective, better or worse, and so forth, with respect to their possible consequences in further experience. But in whatever transformations of experience and by whatever standards these values are determined, a constant measure of what is comparatively more or comparatively less, in any respect, obtains among them. In this sense, I define the meaning

of truth in a true belief (not considering at the moment its method of proof) as the measure of values in its process of construction.

To take a simple illustration: suppose I am undecided how far it is to a distant hilltop and how long it will take me to walk there. I compare the remote destination with my present location by means of nearer objects, whose distance is less uncertain; or I apply some imaginary unit of measurement to what I observe in the intervening landscape. I also compute my average rate of speed in walking the supposed distance and decide that I can arrive within a certain time. In this way, the whole perceptual situation is organized into determinate values which contribute to my final estimate. Suppose that upon reaching my destination I find my belief approximately verified, that allowing for certain deviations my estimate turns out to have been correct. The nature of the truth in my inference is the constant proportion that obtained, throughout the process as a whole, between the temporal and spatial quantities suggested. The margin of error consisted in deviations from this proportion among the various values.

What I wish to emphasize is that the truth of a belief is the measure of its cognitive values, that is to say, its ideas. Knowledge, by which is meant true belief, is not getting the existence of things into the mind, directly or indirectly. It is getting ideas and bringing them into harmonious relationship with one another. Ideas are not existences, either in the shape of the mental acts that disclose them or the signs that express them. Neither are they copies or representations of the existences to which they refer. Ideas are the meanings that facts acquire in the construction of belief and the direction of conduct. In this sense, they are the cognitive values, quantitative and qualitative, which present activities contribute to further experience. Such values accrue to facts by virtue of their implication in a process of inference that is essentially volitional and teleological. Their structural features become instrumental to belief in the "preparatory" phases of experience. Through measurement

and evaluation they furnish dependable grounds of certainty and pivotal points upon which the further reconstruction of experience can turn.

In this consists the cogency of truth. For the harmonious proportion that obtains among data and meanings is a constant measure, as experience becomes progressively enlightened and controlled. "The real is the measurable," not in mathematical terms alone, but also through standards developed in art, morality, and religion. Modern criticism makes it difficult to suppose there is a single ruling intelligence in nature through which every truth is essentially determined. Instead of the *illuminatio Dei*, to which all finite knowledge must be assimilated, we think of gravitation and the uniform propagation of light. Because modern science (until recent years at least) has been averse from limiting the boundless activities of the physical universe in any one direction, it has been insisted that nature is indifferent to all human interests, including even the interest in truth. "If there is any trend and direction in the universe, can we conceive it to be other than the total necessity of things as they are,

> . . . . That
> Which, working all, works but thereat
> Like some sublime fermenting-vat
> Heaving throughout its vast content
> With strenuously transmutive bent
> Though of its aim unsentient?[9]

An answer is indicated in the nature of truth. The reality of things is not wholly indifferent or impervious to human interests if, as we have maintained, knowledge is a genuinely creative transformation of existence into meaning. In affirming that the real is the measurable we are affirming that existence does acquire and possess values for human belief in the realm of mind. Truth is not an eventual product or end-result *of* the transformation, nor is it any single value *in* the transformation, whether as practical utility or logical consistency. It is a constant proportion that is present at every stage of inference.

[9] Hardy, *The Dynasts*, Act VI, Scene III.

True beliefs are true or verifiable by virtue of such measure in their construction and false beliefs are false to the extent that they deviate from it. If I am asked what this measure has to do with the reality of the things that we estimate and define, I should reply: everything. For to say what things significantly are in their incessant changes and transformations is to say how much and of what kind they are in the active presence of mind. Truth is the constant measure of credibility among the fluctuating values of experience.

TRUTH AND PERCEPTION

BY

W. R. DENNES

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Both Professor Adams and Professor Mackay have described the peculiar logical and metaphysical difficulties which are involved in all attempts to know the nature of knowledge, or to render a true account of the nature of truth. It is possible to criticize definitions as inconsistent or redundant, but there is no earthly way of establishing the truth of any definition of truth. The best that can be done is to exhibit the adequacy of a conception of truth by actually interpreting in terms of it all relevant cases (or kinds of cases) of knowledge. Such an undertaking would amount to the development of a complete epistemology. If successful, it would be enlightening; but even it could not be demonstrative of a definition of truth's nature. For some conception of truth (most properly the very conception under examination) would have to operate in the selection of those relevant cases or kinds of knowledge, the interpretation of which was to exhibit the adequacy of the theory of truth. If I do not undertake to explain my conception of truth by developing a complete theory of knowledge in its terms, it is because I lack competence and time, and not because I think there is any better way of explanation—indemonstrative as even that is in the end. What I shall do is to state very briefly my conception of the nature of truth, and then turn to the narrower question how, if at all, we satisfy ourselves of the truth of judgments other than those which describe the nature of truth itself.

"To conceive things as they are is to possess the truth." This sentence of Plato's[1] strictly and sufficiently expresses my view of the nature of truth. The sentence suggests, too, the metaphysical question—what "things" really are—which lurks in all theory of knowledge. "True" and "truth," taken as adjectives, designate a certain character of judgments, viz., the character of asserting such relations between qualitied occurrences as do hold between them. "Truth" and "the true," taken as substantives, designate a true judgment, or a set of true judgments, or a possible whole of true judgments. Thus, "a truth" means a true judgment; "the truth," in one substantive sense, means the true judgment or the set of true judgments relevant to a given region of objects; "the true" and "the truth" in another substantive sense (often challenged, but probably justified as a limiting ideal) mean the total collection of true judgments which would report exhaustively the nature of all facts—the whole nature of nature.

What is central in all these definitions is the meaning of the adjective "true." Judgments are true if they assert such relations between qualitied occurrences as do hold between them. We possess the truth when (and if) we judge things to be as they are.

But what are "things" judged? What are qualitied occurrences? They are substances objective to cognition. And what are substances? Substances are any and all complexes of characters which are manifested in, are the determinations of, and (so far as we know) are inseparable from, the processes of the spatio-temporal flux. They are not qualities or essences divorced from process, nor processes without determinate relations and character, but are variously related compounds of occurrence and essence, of "matter" and "form." Both the substantial processes of experiencing and the substantial processes experienced exhibit the material factor of "becoming"—i.e., involve events. There is no immobility in nature. But specific struc-

[1] *Republic,* 413a7; Jowett's translation.

ture and field are intrinsic and more or less enduring factors in the transformations which are the life of nature.

By "nature" I mean simply all the substantial processes there are—or, if we prefer the phrase, the total substantial process. The acts of perceiving and judging are natural substantial processes among others. Their peculiarity is that in them and to them the occurrence, part of the character, and part of the relational structure, of substances other than (and more or less removed from) the processes of perceiving and judging themselves, are presented or reported or asserted. Such cognitive processes *might,* for all we know, pervade all nature, as some reputable philosophers have argued. But there is no good reason for asserting that they do. Such substances as we have observed appear to be variously related to one another in qualities and in spatio-temporal positions, but only a few complex substances appear to know one another. So far as we can tell, the processes of cognition are confined to what we ordinarily call living things. Such processes are an irreducible kind of substantial process, in which and to which (for I suppose a mind to be simply "the substantial continuum" of such processes[2]) the occurrence and some part of the character of other substantial processes are presented.

But what grounds are there for supposing, as I do with the notorious "man of common sense," that substances noticed are distinct in character and occurrence from the processes of knowing? The processes of knowing, as I have argued elsewhere,[3] have a different material factor (in the Aristotelian sense) and a different history, from the material substratum and the history (partly noticed, partly inferred) of the substantial processes which are objects of knowledge. To be sure, we may know our bodies, our nerves, even our knowing itself, as well as what we loosely call external nature. But in all cases of cognition, even the extreme case of the knowing of the processes of knowing, the process of apprehending has a history, a locus, a direction,

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2 Cf. S. Alexander, *Space, Time, and Deity,* II:81.

3 *Univ. Calif. Publ. Philos.,* X:109–110.

and a material factor, distinct from those of the objects or processes apprehended.

My general view, then, is that nature is the set of substantial processes in which some processes sometimes apprehend or notice others. The substances which know, viz. minds, assert certain fragments of what they notice. Such assertions I call judgments. But I do not mean to confine judgments to verbal statements. Any sort of assertion—gestures, frowns, and so on through a limitless variety—which is understood (if only by the assertor) to mean that specific relations or essences are, or are not, exhibited by the substantial processes to which it refers—any sort of assertion so understood is, in my use of the term, a judgment. All judgments are either true or false, none is both, and nothing but a judgment could be either. Judgments are true if they assert of things such relations or qualities as are borne by the things they specify, false if they do not.

When I say that judgments are about "things," I mean that the descriptive and referential objects of judgment are always substances as I have defined substances, and never characters or essences abstracted from them. For assences or characters taken in abstraction *have no discernible or assertible relations to one another.* As Santayana has argued,[4] it is always in substantial contexts, supported and produced by events in themselves partly "arbitrary" and unintelligible—by facts of growth, change, succession, attention, selection, definition, belief, etc.—it is always, and it is only, in such substantial contexts that any relation between essences can be noticed or asserted. Judgment always refers to and describes substantial processes, "real things"; and true judgments assert such characters of specified real things as they possess. False judgments, like all others, refer to reality, i.e., to substantial processes. There are many sorts of false judgments. It is typical of them to miss or to suppress such qualifications as are intrinsic to their objects —as, for example, that the essences they assert to be joined are joined by virtue of occurrences called "imagining," which

[4] Cf. *The Realm of Essence,* chaps. 2, 3, and 6.

occurrences may be confined to one or to a few substantial minds. Now imagining is as real a substantial process as any other, and the qualities joined in it are actually joined in it. A judgment which reports an imagined object is false only if it asserts (or, through failure to disclaim, suggests) that the imagined object occurs and operates in contexts other than that of imagination. But even if all judgments, false and true alike, refer to and describe reality, it cannot be maintained that the characters true and false pervade nature and apply to all facts. For judgments are only one part of substantial processes, and nothing but judgments are true or false. There is no truth, but only facts, out of relation to judging minds. There are many judgments whose truth or falsity we are in no position to discover. When, however, we do discover truth, what we discover is always the truth of a judgment.

If truth is the character I have defined it to be, how do we determine whether any given judgment is true? How do we satisfy ourselves that we are conceiving things as they are? The answer is to be found, I think, in the advice of the four Apocalyptic Beasts when the Lamb opened the Seals; in the advice of Philip to the cynic who wondered whether it could be true that a good thing had come out of Nazareth: "Come and see." It is by perception that we determine the truth or falsity of judgments.

The term perception is notoriously ambiguous. It may mean the process of perceiving or the object perceived. Again, the processes of perception may be taken to be confined to seeing and the other types of so-called "sense-perception," or may be taken to include every kind of immediate awareness. I know of no cognitive process without an object; and, although I suppose that unnoticed objects exist, it is obvious that they could never rightly be called percepta. Hence I shall use "perception" to mean the concrete compresence of perceiving and percepta and neither the process nor the object taken in a dubious isolation. And I shall adopt what Professor Dewey

calls "an older usage"[5] in meaning by perception any and all kinds of immediate cognition including that intuition by and in which, as Aristotle taught, we notice (if we know them at all) the meaning and the certainty of a few principles of logic.

We shall find that few judgments admit of perceptual verification, and that there is consequently little scientific opinion which we can call true. All judgments claim to be true. At the bar of perception a few claims are positively denied, a few are positively confirmed, but most claims (nearly all, in fact) are left unsettled for want of evidence. The unsettled claims are made by those systems of judgments which are unquestionably most important, most widely believed, and best worth believing, if believing means accepting an hypothesis as a guide or policy in conduct. They comprise the greater part of what we generally call science, and of what pragmatists call developing or experimental truth. And not only for all practical purposes, but also as objects for speculative analysis and for contemplation, they are incomparably richer than the little store of truths. But I am forced to keep the distinction between true judgments and those more important ones which we accept as suggestive, illuminating, or guiding, but which we cannot call true—not because I am squeamish about words, but because I think the distinction is one really noticed, and because (as I shall try to show) any blurring of the distinction leads to serious confusion.

The doctrine that we test the truth of judgments by relevant perception is pretty close to the unreflective common opinion of mankind. Every philosopher who has abandoned the doctrine—and nearly all philosophers have abandoned it—has his own special objections to urge against it. My predecessors in this, and last spring's, series of lectures have found the doctrine "naïve" or "fatuous" or "little short of monstrous." There is so much to learn from their detailed criticism that I could wish to have postponed my own analysis long enough to take full account of all that they have said. But as that has been

[5] *Experience and Nature,* p. 332.

impossible, the best I can do is to examine what seems to me to be the main classes of objections to the common-sense doctrine, with a view to determining whether the opposed views are compatible with the occurrence of knowing and the ascertainment of truth; and, if they are, whether they do not finally assume something very like the theory that the test of the truth of judgments is perceptual.

The most drastic challenge to the doctrine that perception is the test of truth is made by those theories of knowledge which deny that such a cognitive transaction as the direct perception of qualitied occurrences takes place at all. The denial is of two sorts. One reduces perception, along with all cognition, to movements—to overt acts of manipulation and discrimination. The other reduces all significant perception to inferential and interpretive judgment. But even of philosophers who admit that perception occurs and has a cognitive grasp, few regard it as capable of testing the truth of judgments. Perception, they say, is too indeterminate, is dependent upon physiological intermediation too complex and too "sluggish," is too much influenced by habit and expectation and by the tendency to fill out in imagination what may be the fragmentary patterns really present in its objects—perception is too thoroughly pervaded by a host of such faults and limitations to be trusted as the touchstone of the truth of judgments. If judgments (including those which report the content of perceptions) are to be called true, such critics tell us, it is only by virtue of their relation to pragmatic criteria or to such rational norms as coherence or speculative scope and luminousness.

We may take a first step toward satisfying ourselves whether or not perception should be accepted as the decisive test of the truth of judgments, by inquiring whether the doctrine can be defended against the following salient objections: (1) There is no perception of qualitied events, there is only motion. (2) There is no perception, but only judgment. (3) Perception occurs but is indeterminate and the test of the truth of judg-

ments and of the meanings of perceptions themselves, is pragmatic. (4) Perception occurs but is relatively insignificant, and the test of the truth of judgments is the degree of their systematic coherence, their speculative sweep, their satisfactoriness for contemplation.

Powerful tendencies in pragmatic theory of knowledge, in naturalistic metaphysics, and in behaviorist psychology, have lately converged toward a cosmology of great promise. I mean the view that the universe is all one kind of thing, patterned motion—and that knowing is one set of motions among others. This neutral monism of motion, in its extreme development discards images, characters, and essences in explaining cognition. Knowing is simply manipulation and discrimination, these are actions, and actions are motions. The metaphysics of pure motion is probably "the coming philosophy," if, indeed, it does not already deserve to be called the best fashion of our time. Now philosophers are often proud of being unfashionable (touched as they frequently are by the fancy that their views are ahead of the times, or detached from all limitations of date and mode, or, if behind the times, not merely antiquated but old and abiding truths); but so far as I cannot agree with the monism of motion I am not proud, but rather uneasy. And not merely as being out of style. The Razor of Occam, and the Regulative Idea of Reason which commands systematic unity in knowledge and in its object, coerce my thinking as they have most men's—at least since Thales. The new philosophy, of nature and mind as motion, honors both of these principles to an unusual degree, and it is said to be compatible with the methodological assumptions of much recent natural science. Besides, it defines the processes of cognition in such a way as to make them as public and observable as I should conceive most of the objects of cognition to be. If I cannot see my way to accepting this promising new position, it is, in the first place, because it seems to deny what I notice as a factor in the activities of perceiving and judging; and, in the second place, because it seems to make any account of truth impossible.

Professor Pepper has gone as far as any one toward developing a theory of truth on the basis of an identification of knowing with discriminative and manipulative movements. In his interpretation, judgments are groups of movements which are precipitated by the collisions of opposed movements, and which at least partly overcome the consequent blocking of action by leading the way into fresh paths of motion. The defining peculiarity of judgments which distinguishes them from all other movements is, on this view, their "significant reference," i.e., the quality of leading to further movements. Of all the groups of referent movements which are judgments, true judgments comprise that part which lead through continuing movements to equilibrium or rest—that is, to a movement which has no continuing reference, which leads to no further movement, which lacks propulsive "carry." A true judgment could not, on this theory, be the mere suspension of motion—for that would be no judgment at all; but a true judgment would be one that led to motions which were really motions but which led to no further movement. In an examination of this theory[6] I have argued: (1) that it implies that all motions (and hence all natural processes) are judgments, since so far as we know all movements are "grouped" and lead to (or are followed by) other movements; (2) that it implies that no judgment is true, since so far as we know no movement lacks a successor or leads to rest; (3) that, if the dubious assumption is made that animal movements come to rest with death, then the theory implies that all judgments made by animals are finally true; (4) that the theory denies that characters or essences are perceived as identical in diverse manifestations, whereas without noticed identity of character in distinct movements there would be no possibility of determining which judgment (or movement) was verified by any specific transition (assuming such transitions occur) from motion to equilibrium or rest. To say that identity of essence is merely a conventional name for the overt convergence of bodily movements addressed to distinct objects, is to

[6] *Univ. Calif. Publ. Philos.*, X:89–96.

shift rather than to escape the positing of perceivable essences. If an animal's responses to two objects converge entirely, we cannot distinguish the responses as playing upon distinct objects. If they converge only in part, we determine the degree of their similarity by noticing another animal's discriminative responses to the responses of the first animal. In the end, I do not understand how we can observe and compare the responses or movements which animals make (or which constitute animals, if we prefer that way of speech) except by noticing characters or patterns of motion some of which are identical in diverse instances.

The theory which opposes the claims of perception to test truth on the ground that there is only action or movement, and no perception of essences, fails because it cannot describe the cognitive movements of manipulation and discrimination themselves, and because it cannot distinguish which judgments on its own grounds are true and which false, save by admitting the perception of characters identical in diverse instances—that is, the perception of qualitied and related occurrences.

Similar difficulties face me when I try to follow Professor Mead's[7] doctrine that hypotheses, when they work, cease to be cognitive and become simply the actual processes of conduct in which their "verification" culminates. If hypotheses are judgments produced by the blocking of action through conflict of meanings (i.e., of leadings), and if such judgments become true when the hypotheses work—i.e., when the action inhibited by the conflict is freed to go on—then the judgments seem to disappear as judgments with the problem that bred them, and to be replaced, as it is replaced, by the on-going of conduct. On this interpretation I do not understand how we should ever know *what* specific judgment it was that had, in any series of experiments, turned out to be true. I find myself in no better case when I try to understand Professor Dewey's theory[8] that successful thinking is thinking which terminates when its required object is "present" or is satisfactorily but non-cognitively

[7] Present volume, "A Pragmatic Theory of Truth."

[8] Cf. *Experience and Nature,* 326, 335.

"had." How can any non-cognitive situation, whether it is a doing or a having, *refer* to a judgment, let alone guarantee or constitute its truth?

The second doctrine which opposes the claim of perception to test the truth of judgments is the doctrine that perception itself is not the immediate apprehension of specific qualities in relation, but is only a kind of judgment—judgment masked and elliptical. This doctrine seems to me to be the misstatement of an important fact about perception. Perception does not occur in isolation from processes of judgment. But can we maintain on that ground: (1) that the occurrence of perception is simply the occurrence of an act of judgment, or (2) that the content of perception is nothing but the meaning of the judgments required for the interpretation of that content?

So far as we know, it is largely through hearing (under conditions that evoke his interest) repeated assertions of certain relations between presented things and qualities that an average child comes to notice the things and instances of the qualities—in short, that he comes to perceive. Civilized men, as well as savages and children, probably perceive little if anything but what combinations of discourse with practical urges have brought to their attention. Also, it is through judgmental analysis and comparison—and only so—that we can report the occurrence or interpret the content of a perception. But the genetic dependence of perception upon processes of judgment does not prove, or even suggest, that perception is judgment. As an occurrent process, perception is as inextricably bound up with, and as dependent upon, the digestion of food, the circulation of blood, the assimilation of oxygen, the functioning of endocrine glands, and the occurrence of limitless other and little known substantial processes within and without the organism, as it is bound up with and dependent upon the proceses of judgment. Few men find justification in these facts for the conclusion that perceiving is identical with breathing or eating or contraction of the heart and arteries. And the genetic

dependence of perception on a matrix of processes, including imagining and judging, no more justifies the conclusion that perceiving is judging than it justifies the conclusion that perceiving is breathing or eating or simply moving.

Those who resolve perception into judgment put most weight on the second phase of the above argument. There are better grounds, they say, for defining perception as judgment than for defining it as any other process upon which it is dependent, because the meaning or the content of perceptions can be made explicit only by judgmental analysis, and is therefore nothing immediately given or presented. This is an important argument, and I must explain why I do not accept its conclusion.

In the first place, since interpreting is judging, it is obvious that *nothing* can be interpreted except by and in judgments. But if this fact makes perception judgment, then, by the same token, it makes judgments out of *everything* in the universe which has been interpreted or understood—of wars, earthquakes, and eclipses, as well as of perceptual processes.

In the second place, if its terms are to have specific meanings, discourse requires reference to immediate cognitive presentations which are not judgments. Judgmental definition and interpretation would be a process endless and altogether futile if it did not rest on "ostensive" definitions.[9] If we are to communicate meaning by asserting propositions we must, at some stage, point to examples of the variously related and qualitied processes which our words mean. This is as true of the farthest reaches of speculative discourse as it is of the simplest everyday conversation. Of course, a man cannot point his finger at a quantum phenomenon or at the transcendental unity of apperception. But if discourse about such objects is to mean anything, the terms, the principles of analysis, and the methods of inference involved in the discourse, must in some way or other be introduced as meaning (or as being) processes and relations that can be directly noted. If this is not done, the discussion

[9] Cf. W. E. Johnson, *Logic,* Part I, 94–96.

can convey nothing either to its author or to its audience. Further, if discourse is to be called true, as well as significant, we must perceive in the substantial processes it designates the characters and relations it asserts, or infer those characters and relations from such perceptions by intuitively certified processes. There can, then, be little if any known truth about such objects as transcendental egos or cosmically pervasive quantum phenomena. But for the present what I am concerned to point out is that judgments could have no meaning, let alone truth—could not be judgments—if there were no perceptual apprehension of the significance of their terms. Such perceptual apprehension of significance, and its correlate, the introduction or designation of meanings by one percipient to another, are rarely, and need never be, artificially isolated steps in cognitive and practical life. But unless they are actual factors in men's behavior and knowing, human judgments can mean nothing.

Judgment is necessary to the development of perception and to the interpretation of the content of perception, but judgment does not supply or constitute that content. On the other hand, perception does supply the content of judgment. Hence, while in actual genesis and development the strands of perception and judgment are interwoven, the cognitive rôle of perception is prior to that of judgment, and not vice versa. Professor Lloyd Morgan observed of his chicks[10] that their "findings" were always prior to their seeking and interpreting, and not vice versa. Only after they had noticed presented crumbs or grains did they perform upon, or direct towards, them such operations as we should regard as recognitive, interpretive, or inferential. And although the perceiving grew sharper and fuller with the processes of interpretation, Lloyd Morgan thought some rudiments of it occurred as the basis of interpretive processes.

In the third place, if judgments ever describe existent individual objects, they presuppose the immediate presentation of

[10] *Emergent Evolution,* 101, 108, 126, 130: "Reflective consciousness involves as natural basis a lower plane of consciousness which is unreflective and perceptual. . . . ."

charactered occurrences which are distinct from one another in substance and not merely in interpretable meanings. For, to ascribe predicates to subjects, to determine determinables—in short, to judge—is never in itself to apprehend qualitied individuals—existents. The knowing of the existence or occurrence—even of a judging process—is not the process itself, nor a judgment about the process, but the immediate awareness (i.e., the perception) of the process's occurrence.

In the fourth place, if discourse is to include inference and yet is not to be dissipated in such notorious paradoxes as that called the "paradox of implication," discourse must rest upon both asserted and hypothetical premisses, and upon neither sort of premiss alone.[11] Besides, the propositions which define valid operations of inference and methods of analysis cannot in the nature of the case be demonstrated, cannot be entertained hypothetically, and cannot be true merely "by definition," but must be noticed or perceived or intuited as true, if *even hypothetical conclusions* are to be derived from hypothetical "material" premisses.

If, on the other hand, the real objects of discourse are (as Mr. Adams argued last year[12]) present equally in theoretical interpretation and in perception; if the mind in all reaches of its activity has a direct grip on the real it describes; then all bona fide judgments without exception are (as I understood Mr. Adams to admit) true. None, however, could be validly inferred; for in the absence of hypothetical premisses there is no valid inference but only circular reasoning. If a more usual view is taken of judgments as asserting of reality characters and relations which judgments themselves cannot establish as holding of the real; then valid inference will require a certain number of premisses asserted upon the ground of immediate apprehension, and not upon the ground of any process of judgment. Thus discourse, if it is to include inference, must *rest on* perceptions as it must *develop in* judgments, and the percep-

[11] Cf. W. E. Johnson, *op. cit.*, Part I, chap. 3, especially pp. 38–47.

[12] *Univ. Calif. Publ. Philos.*, X:177–205.

tions cannot themselves be merely judgments—inchoate, masked, or in any other way disguised.

The doctrine that perception is intrinsically judgment seems to me to stem chiefly from the view that, if categorial relations can be expressed and interpreted only by judgments, it follows, not (as with some types of idealism) that judgment institutes the relations, but that the relations must be a sort of thing that cannot be immediately noticed or perceived, but can only be *judged*, to hold between qualities and things. This view presupposes the tenet that immediate awareness (if there is any) could be only the ineffable awareness of bare particulars—i.e., of events naked of qualities and relations, or else of sheer qualities independent of the processes of occurrence which are factors in all spatio-temporal existents. On such a view, if perception is the apprehension of qualitied occurrents, perception cannot be immediate awareness but must be a product of categorial judgment. As far as I can see, there is no shred of empirical support for such restriction of the object of immediate awareness to fictitious bare particulars. What we perceive immediately are charactered occurrences. I notice directly my moving arm —not instantaneous (and hence non-occurrent) events, nor yet particular qualities which I weave by imagination and judgment into a moving substance. I judge when I assert the differences and relations of the phases of the motion, but my perception is essentially prior to my judgment, and apprehends directly the relations and phases judged.

Even if (as I suppose) perception never plays its part save when judgment sets the stage, reads the prologue and epilogue, and serves as prompter, it does not follow that there is no distinct rôle of perceiving, or no actor to present it. If there were no direct perception, the terms of discourse could have no meaning, judgments could not pretend to assert characters of the individual and the existent, and inference could not be valid. Finally, from my point of view, without perception we should know no truth. If the objects, and the reference, of judgments

were themselves judgments, and so on ad infinitum, if there were no awareness of facts which awareness was not itself a judgment, I do not understand how we should ever be satisfied that any judgment was true.[13] And if we know no true judgments, I doubt whether we can claim to know the meaning of truth as a norm or ideal. Some abstract norms can claim definable meaning in the absence of any concrete instances of them; but I do not know what the norm of truth, at least as I have defined truth, could mean to anybody who had never perceived any objects to be related as he had judged them to be related. I judge that a certain friend's height is between six feet and six feet three inches. I may continually refine my measurement of him, but I cannot say that my conception of the truth about his height is derived from an abstract and instanceless norm of truth, as being the character of those judgments which assert things to be as they are. Such a norm would be quite unintelligible to me if I were acquainted with no judgments which asserted relations noticed as holding between things. I cannot know the whole truth about my friend's height, but I do judge truly that on certain occasions, when he stands against a measure, the top of his head is on a level with a region somewhere between six feet and six feet three inches, as marked and conventionally named on the measure. This judgment of mine I know to be true because I perceive the relations it asserts to hold as it asserts them. I shall presently try to explain the sense in which such perception is immediate cognition. I trust it will be understood that I do not regard the immediacy of perception as implying that perception is either instantaneous or isolated from a context of purpose and interpretation. The occasions of my perceiving my friend's relations to yardsticks are *durées*, not instants; the compresent processes, perceived and perceiving, are both temporal; and the physical, biological, technical, economic, and moral conditions of the being of men and of yardsticks and of their functional connections, are doubtless complicated beyond any man's conception, and are certainly

[13] Cf. Aristotle, *Eth. Nic.*, 1112^{b}34–1113^{a}2, 1141^{a}3–8, 1142^{a}24–30.

indispensable to my noticing my friend's height. Nevertheless, in perception I directly apprehend a relation between my friend and a measuring rod; the judgment which reports that relation is true; and it is by understanding such true judgments that I understand the meaning of truth as the end sought in the continual correction of judgments. If truth were quite inaccessible to us, if there were no known and certain instances of it, I should have to call truth, not a norm, but an insignificant vocable—generated by a vague human yearning widespread but objectless.

Truth means nothing if no judgments are known to be true. The judgments which are known to be true are that very small class of judgments which assert that objects are determined as they are perceived to be determined. Such perceiving is historically and practically inseparable from its setting—a setting vastly richer than the context of preceding and following judgments—richer, and more complex, I have no doubt, than anything men have ever dreamed or imagined. But intrinsically the perceiving must be a direct awareness, and not a form of judgment, or judgments themselves could have neither meaning nor truth.

I have confessed, in a sentence borrowed from Plato, my conception of what truth means; I have offered the doctrine that perception is the test of the claim to be true which all serious judgments make; I have argued—tediously I fear, but still not adequately—that perception is a substantial process of immediate cognition which cannot be reduced to a complex of motions nor yet to a judgment or a set of judgments. The respect in which my account has been least adequate is in its failure to indicate sufficiently the importance of the theories of truth whose presuppositions and implications I do not finally accept. To find truths is much more important than to define truth. And to invent hypotheses worth acting on, and works of imagination worth contemplating, is probably even more important than finding truths. It is certainly in such processes

of experiment and correction as Mr. Mackay explained[14] last year—in such processes guided by the speculative imagination which Mr. Adams[15] described as the culmination of the cognitive development through touch and sight and memory—it is certainly in experimental processes, so guided and inspired, that men come to frame hypotheses worth acting on and to construct sciences and imagine poems delightful to contemplate.

But, although practical enterprises prompt our knowing and profit by it; and although speculative constructions (even the most daring and abstruse) guide our knowing; neither practical success nor rational norms have anything to do with the *truth* of the judgments which would never have been made without their influence. Judgments originate in practice and reach their fullest development in rationally articulated systems, but, warned as we have been against the "fallacies of suppressed prepositions,"[16] I am forced to deny that either its practical auspices or its formal expression and connections, has a bearing upon a judgment's truth or upon our knowledge of its truth. For *truth,* the decisive factor is the agreement of a judgment's assertum with fact; for *knowledge of truth,* the decisive factor is the perception of such agreement between a judgment and the substantial processes to which it refers—in Mr. Loewenberg's phrase "the terminus" and "the pivot." There can be no doubt that the processes of knowing stand in relations of all the four types which Mr. Loewenberg distinguished. But, if I rightly understood Mr. Loewenberg, his analysis itself claimed to be *true* (i.e., to be the truth about knowing), not by virtue of a pragmatic justification nor by virtue of a formal demonstration, but simply as the account of the four-phased process which knowing ("the terminus") is experienced as ("the pivot").

But is perception itself ever trustworthy? Even if perceiving is not simply moving or judging, is it not too vague; too far

[14] *Univ. Calif. Publ. Philos.,* X:63–86.

[15] Present volume, "Truths of Existence and of Meaning."

[16] Present volume, "The Prepositional Nature of Truth."

removed in space and time from its objects by intermediary physical and physiological processes; too much disturbed by proprio-ceptive and intero-ceptive impulses when its object is a fit stimulus, say, for extero-ceptive impulses only; too much disturbed by affective preference; too much modified by past experience, by conation, by anticipation of the future, by pre-perception; too much transformed by the organism's power of imaginatively completing patterns of which fragments only are present in the objects of its attention, and of correcting the inversions and distortions produced by lenses and similar devices;—is not perceiving too thoroughly pervaded by these and other faults and limitations ever to deliver things to us as they are?

Certainly we do not perceive things as they are, if that means perceiving them in *all* their qualities and connections. We are all shamed every day by experts who show us in a hundred fields how little we notice of what is to be noticed. And there is doubtless a vast range of qualities and processes in nature never noticed by anybody at all. But this does not justify a suspicion that what we do notice is anything less than the qualitied occurrent processes it appears to be. The only ground for such a suspicion would be the perception (or the inference from perceptions) that processes are not what they are noticed to be. Such perception (or inference) is probably impossible; and, if possible, it would discredit itself as much as any other perception.

The cognitive vagueness of perception is not misleading unless that vagueness is neglected or denied in the judgments which report perceived relations. I did not perceive my friend's absolute height at an absolute instant, and if I claimed to know such absolutes I should be in error. But this does not mean that I perceived nothing definite when I measured my friend. From a given region of observation I noticed, during a stretch of time, some of his relations to certain arbitrary minima and maxima along certain coordinates of extension. These relations I re-

ported in the judgment: "he is taller than six feet, shorter than six feet three." There is no reason to suppose that a temporal gap must intervene between such a perception and such a judgment, and make the judgment precarious. Temporal intervals between noticing and reporting *may or may not* make reports uncertain; but even if they did introduce uncertainty, such intervals do not invariably occur. No perception is instantaneous; and many perceptions continue through the time-stretch which includes the reporting and interpreting of them. For example, I continued to notice my friend's relation to the measuring rod while I reported that relation.

A layman who reads a few of the recent physiological and psychological studies of perception cannot fail to learn two things: (1) that the physiology and physics of perception are prodigiously complex, and yet there is no reason to suppose that these sciences have begun to take the measure of the complexity of the processes they study; (2) that only an expert's opinion is worth hearing on any detail of the phases, the development, and the organic functions of perceptual processes. Being a laymen in these studies, I have learned thus much, and I shall try not to forget the lesson. Nevertheless, the following considerations seem to me to demand the attention of every critic of the cognitive claims of perception:

Not only perception, but all the effective natural processes we have ever observed, seem to exhibit, or at least to be compatible with, limitless complexity of intermediation between any two of their phases or stages. But men do have fathers, chemically treated photographic plates do record steps in visible processes, and some *A's* do equal *B,* in spite of all the actual (or logically conceivable) complexity of the intermediation between the stages of such processes or the elements in such equations. The fact that the physical and physiological intermediaries between objects and our awareness of them are intricate, are time-consuming, and are largely untraced, is no more proof that we do not directly notice aspects of things as they

are, than the intricate and time-consuming operations of an adding-machine are proof that the sum it delivers is not my actual debit or credit balance.

Against the trustworthiness of visual perception it is often urged that seeing is a late and prodigiously complex outcome of evolutionary processes, and that even after its appearance in the race it is not innate or instinctive in individuals, but requires a considerable training for its development. Therefore, argues (for example) Mr. Lloyd Morgan,[17] visual perception is dependable only when it is corroborated by other more primitive modes of sensory experience—notably by "contact treatment." But the late development of vision and its conditioning by training, are really no arguments against its reliability and directness. The long development of musical composition, of instrument-making, of traditions of ensemble playing; the training of specific orchestras and of specific hearers; are all conditions of the experience of what we may call a beautiful and simple symphonic theme. But such elaborate conditions do not at all imply that the theme is anything contradictory of what it is heard to be; or that it would be more certainly known if we, or a savage, or an infant, touched the vibrating strings and surfaces. The same holds of the trained seeing of a picture. And when we do examine the alleged tests of one mode of perception by another, what do we find? The case of the test of vision by touch is typical. All accurate estimates of contact, or of approximation to contact, hinge finally upon the visual reading of instrument indicators or of their graphic records.

A serious proof that perception falsifies the objects it purports to notice would have to rest on the discovery (itself perceptual), not merely that objects are "more" than they had appeared to be, but that they are positively *not* what they had appeared to be. Just such discoveries are frequently reported and are exploited by epistemological critics of perception. Pains are perceived in amputated members, candles behind mirrors; different observers perceive the same objects differently colored

[17] *Op. cit.*, 46–47.

and differently shaped; perceivers notice what they are in the habit of noticing, or expect to notice, or want to notice; percipients fill out fragmentary perceptual *Gestalten,* and so on. Such discoveries lead some critics to say that perceptions could not test the truth of judgments, but rather stand in need of tests themselves. But what tests are available to determine the trustworthiness of perceptions? I have tried to show on another occasion[18] that the pragmatic test, as defended by William James and Professor Lewis, requires the dubious assumption that men cannot act resolutely on an hypothesis unless they believe it to be true. Furthermore, every formulation that I have been able to understand of the view that the meaning and validity of perceptions and judgments lies in the actions to which they lead, seems to assume that we can perceive grades of prosperity or success, can notice that a policy has worked and what policy it is that has worked, can perceive the positions of the indicators on galvanometer dials and other instruments (which positions signalise the results of hours or years of fumbling or straightforward experiment), and can notice whether or not these perceived positions are what the hypotheses which inspired the experiment required or predicted. Theories that the meaning and validity of perception are pragmatically determined seem thus to rest upon the assumption that perception (which they pretend to test) is trustworthy; or else (perhaps more consistently) they reduce cognition to motion and in the reduction annul it.

Attempts to test perceptions by their relevance to, or compatibility with, coherent systems of propositions which make speculative insight possible, have many suggestive by-products. But logically there is no possible proposition, reporting a perception or anything else, which does not admit of the development of a whole system of propositions coherent with it and as extensive as any other system you please. But, if any logical system is to include inferences, there must be propositions in the

[18] "Practice as the Test of Truth," *Univ. Calif. Publ. Philos.,* X.

system which have meanings and which have grounds for their assertion; and these meanings and grounds cannot themselves be judgments in the system in question. A condition of significant discourse is that there must be factors in it, and "surrounding" it, which are not themselves figments of discourse.

Investigations of the nature of truth have sometimes concluded with Mr. Santayana that only a *complete* description of an object (or of the whole universe of objects) should be called true. Since no such complete description exists, unless in God's mind, the corollary is commonly appended that such judgments as men make are probable only, never true. However, a complete description of an object (or of the whole universe of objects) would itself be true only if the included accounts of each of the constituent aspects of the object were true. There is no reason why we should not notice an aspect, or some aspects, of a thing as they are, even if we miss most of the other aspects. If by "probable judgments" we mean judgments which predict future events, I know of no grounds, other than the noticed occurrence of the predicted range of events themselves, upon which to justify the probability of the judgments. If, on the other hand, probable judgments are taken to be statistical statements of the proportion of hits and misses in a range of phenomena—say of deaths in Berkeley in a given year—then such judgments rest upon accepting as true, and not as merely probable, the reports of perceived occurrences called "dying in Berkeley" in the year in question. Similarly, theories that social or inter-mental coherence (or the thinking of a Standard Mind as actualized in such coherence) tests the truth of judgments, all presuppose that the inter-related minds notice directly and reliably the mutual agreement or divergence of their judgments.

If perception is fallible, neither the norms of practical success nor those of logical or social coherence, can guide us in its correction; nor can our difficulties be evaded by surrendering the claim of all judgments to be true and calling them merely

probable. But there is no ground for saying that perception errs when, for example, it reports various colors, shapes, and positions of the "same things." The colors that artists, psychologists, "average men," and color-blind men, see in things, may all be in them. It is only under severe limitations that the law of contradiction commands qualities. Those qualities that appear, appear. If they could not appear, they would not; and their appearance guarantees their actual being. If you see grass green, there is no earthly reason to suspect that it is not green. Others may not notice that it is green, may be unaware of its greenness, but it is impossible that they should notice that it is not green, and so confound you. With different training, or with different sensory equipment, they (or you) might pay attention exclusively to the white or the black or the gray which is in grass. But this fact would not exhibit perceptual fallibility. Grass cannot be, and not be, green; but (if it is so noticed) it can be and is green and also white or gray. And probably it is much else besides, which no man has ever noticed.

Again, the visible candles before and behind the mirror are both there where they appear; but the candle behind the mirror may be visible only, not tangible. No law of contradiction tells us, or could tell us, that visible candles cannot be where tangible bricks and mortar are. So far as shapes are concerned, we have all been taught to think of things as having as many shapes as they stand in perspectives, and to think of perspectives as being, in one sense of the term, infinite. Certain ordinal properties of sets of events may be constant in all perspectives, but that is all.

What, then, are the general limits within which we may hope to know truths, if perception is the decisive test of the truth of judgments? Part of the answer to this question is clear. A man may be sure of the truth or falsity of judgments so far as the scope of his perception—whose present is always a *durée*, never an instant—embraces those qualitied events, the relations between and within which the judgments assert. For the rest,

if there are intuitively evident principles of inference, then those judgments also are true which are validly inferred from perceptually verified judgments. The problem whether principles of inference are intuitively evident, or are merely postulates of method, involves a vast inquiry which we must (and, happily, need) not touch. For even if true judgments are few and paltry and of little significance, even if we must (whether or not we must this paper leaves an open question) take all but the most skeptical view, denying truth to inference, and confining truth to those judgments which assert what some percipient notices to be the order and character of certain events within his perceptual range—even if we should have to take this very restricted view of true judgments, we should still have secured what we are mainly interested in. For, if our definition is acceptable, we may say that we know the nature of truth, and that we possess examples, however few, of indubitably true judgments. Hence, the norm of truth is not an utter and inapplicable abstraction, as it would be if all truth were inaccessible.

But why, after all, may we not call the stirring "affirmations" of heroes and the daring speculations of poets, naturalists, and prophets true—true, even if they are not perceptually verified or verifiable? In the first place, because (on our view) they are not known to be true. In the second place, because the free development of such speculation itself, and humanity's defense against tyrannies of force and of dogma, lie in the clear conviction that no policy and no theory can pretend to dominate us as right or true unless its claims to truth have been perceptually verified. No cosmic metaphysics, no ethics, no politics can claim to have achieved such a verification.

It is a free world if speculation and experiment have no limits and may develop unhampered in variations all of which may yield us stimulus, guidance, beauty, insight, use. But it is not a free world unless we know what truth is, possess instances of it, and (by comparison with the instances and meas-

urement against the standard) can judge the claims to truth which partisans make in behalf of the cosmic and moral doctrines which they urge upon us. If such doctrines are not known to be true—as always so far, on the present analysis, they have not been—we may find in them whatever light and leading we can; we may, and perhaps ought, to love some of them far more than any truths we know; but we can smilingly and confidently defy the bigot who tells us we *must* accept them as true, *must* believe them, *must* live by them. It is so, and only so—by knowing what truth is, how truth is ascertained, and how little of it is ascertainable—it is so, and it is only so, that truth (as we were promised) makes us free.

BELIEF AND FACT

BY

PAUL MARHENKE

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"Every belief," writes McTaggart, "asserts that something (in the widest sense of "something") possesses a quality, or is connected with something by a relation. If the belief is true, then that thing does possess the quality, or is connected with something by the relation. The possession of such a quality, or the connection by such a relation is a fact, according to our definition. And if the belief is true it will correspond to the fact."[1] If common sense had been asked to formulate what is to be meant by the truth of a belief this is probably what it would have written, just as it would have agreed to McTaggart's definition of the falsehood of a belief. "A belief owes its falsity, as a true belief owes its truth, to a relation to a fact. It cannot, of course, be a relation of correspondence to a fact, since then the belief would be true. I think that the relation in question is one of non-correspondence to all facts."[2]

Nevertheless, in spite of McTaggart's concurrence with the opinions of common sense, the definition of the truth and falsity of beliefs is not quite so simple as common sense and McTaggart suppose. What do we mean when we say that a belief stands in a relation of correspondence to a fact, if true, or in a relation of non-correspondence to all facts, if false? It is apparent that this does not mean that an *event* in some one's mental history corresponds to a fact in the one case, or does not correspond to any fact in the other. As events in some one's mental history,

[1] J. M. E. McTaggart, *The Nature of Existence*, 14.

[2] *Ibid.*, 20.

a true belief does not differ from a false belief, i.e., as events beliefs are neither true nor false. If they may be said to be related to facts at all, they stand in the same relation to all facts. Such events may of course differ with respect to their properties, one belief may be more forceful than another, for instance, but they do not differ in their relationships with facts. Beliefs do differ in their relationships with fact, if we consider the intentional objects of such events. Beliefs are not merely occurrences in some one's mental history, but occurrences which intend or mean something. This something is the content believed. I may believe, for example, that tomorrow will be a fine day. 'That tomorrow will be a fine day' is the intentional object of this belief. Let us speak of it briefly as the 'objective' of the belief. Now when belief is defined as a relation between a certain mental event and an objective, we are considering belief not as an event, but as a fact. Such facts are expressed by propositions of the form "I believe that so-and-so." Thus I may express the fact that I believe that tomorrow will be a fine day by saying: "I believe that tomorrow will be a fine day." A fact of this sort is sometimes in a relation of correspondence to a certain fact and sometimes in a relation of non-correspondence to all facts. When the fact which I express by saying "I believe that so-and-so" corresponds to a fact, we say that the belief is true, and when it does not correspond to any fact, we say that the belief is false. Thus the fact which I express by saying "I believe that tomorrow will be a fine day" corresponds to a fact, if the proposition "tomorrow will be a fine day" also expresses a fact. But if this proposition does not express a fact, it will stand in a relation of non-correspondence to all facts.[3] The correspondence or non-correspondence of belief with fact is therefore a relation between belief and fact which depends upon the objective of the belief. If the objective of the belief expresses a fact, the belief is in a relation of correspondence to a fact; if not, it is in a relation of non-correspondence to all facts.

[3] Cf. G. E. Moore, "Facts and Propositions," *Proceedings of the Aristotelian Society,* suppl. VII:199.

So much may be taken for granted by any theory of belief. Difficulties of a more formidable sort appear when we ask: What sort of an entity is the objective of a belief? When truth is defined as correspondence between belief and fact and error as non-correspondence between belief and all facts, what is sometimes meant is that the objective of the belief corresponds to a fact in the first case, and corresponds to no fact in the second. We are here confronted with a third meaning of the term belief. Belief is identified neither with the act of believing as an event, nor with belief as a fact, i.e., with belief as a relation between such an event and an objective, but with the objective itself, i.e., with what is believed. And when it is said that what is believed is true when the objective of belief corresponds to a fact, and false when the objective does not correspond to a fact, what is usually meant is that the objective of belief is in no case identical with the fact. But not only is the objective of belief not identical with the fact; it also has no constituent in common with the fact. Moreover, it is usually said to be independent of whether anyone believes it or not. And therefore, when the definition of truth as correspondence between the objective of belief and fact and of falsehood as non-correspondence between the objective of belief and all facts is not taken for granted, it is because both of these assumptions are considered to be highly dubious. The obvious meanings which correspondence and non-correspondence take on this view are similarity and dissimilarity. An objective is true when it is similar to the fact and false if it is dissimilar to all facts. This definition of correspondence is therefore not at all identical with the one we considered previously. It might appear that we had tacitly assumed this definition of correspondence also, when we spoke of an objective *expressing* a fact. But this is not actually the case. The theory which defines truth as correspondence between an objective and a fact has subjected the assertion that an objective expresses a fact to a certain analysis. But this assertion may be capable of a different analysis. It is therefore convenient to use some term which is purposely vague, i.e.,

unanalyzed, to express the relation between the objective of a belief and the fact or facts on which the truth or falsehood of the belief depends.

Before we proceed with this analysis, it is necessary that we define some of the terms which we have so far left undefined. A fact is defined by McTaggart "as being either the possession by anything of a quality, or the connection of anything with anything by a relation,"[4] the term "anything" being meant to include both substances and properties. This definition of the term fact accords most closely with the usage of commonsense. Some philosophers, however, have departed from this usage and have spoken of particular substances as facts. We shall always understand the term fact in the sense in which it was defined, and shall indicate, whenever necessary, the departures from this definition. A fact, being always complex, requires for its expression a whole proposition. "We express a fact," writes Mr. Russell, "when we say that a certain thing has a certain property, or that it has a certain relation to another thing; but the thing which has the property or the relation is not what I call a 'fact.' "[5] By a proposition we shall understand any symbol or combination of symbols which represent or stand for an objective, an objective being defined as the intentional object of a belief. But inasmuch as we are here not interested in the symbolic representation of objectives, but in the objectives themselves and their relation to facts, we may define a proposition simply as the objective of a belief.[6] The definition of an objective as the intentional object of a belief is meant to be merely denotative; it is meant merely to denote the kind of entity whose relation to facts we propose to discuss. An objective, like a fact, is always complex. This is indicated by the fact that an objective can be symbolized or expressed only by a whole proposition. We shall therefore speak of the elements into which these complexes may be analyzed as the constituents

[4] *Op. cit.*, 11.

[5] Bertrand Russell, "The Philosophy of Logical Atomism," *The Monist*, XXVIII (1918):501.

[6] Cf. McTeggart, *op. cit.*, 9 *et seq.*

of the objective or the fact. Thus the fact that Caesar crossed the Rubicon has the constituents Caesar, crossing, and Rubicon. The objective of my belief that Caesar crossed the Rubicon has as its constituents Caesar, crossing, and Rubicon. These two sets of constituents are not necessarily identical. Caesar and Rubicon as constituents of the objective may be merely descriptions that denote nothing actual and therefore refer to nothing existential. But if so, these constituents cannot be identical with the constituents Caesar and Rubicon of the fact. At any rate the objective has constituents as well as the fact, for what I believe is always complex.

If all our beliefs were true we could maintain that the objectives of these beliefs are identical with facts, that the very constituents of the fact are identical with the constituents of the objective. The existence of false beliefs prevents us from holding that the relation between the objective and the fact is quite so simple. If we always believed facts, no belief could ever be false. Unfortunately there are false beliefs, and the objectives of these beliefs profess to express facts quite as much as the true ones. When I assert that Caesar crossed the Rubicon my assertion is true because it is a fact that there was an individual named Caesar who crossed the Rubicon. The assertion of this proposition is the assertion of a fact. When I assert that Nero was the last of the Roman emperors I am not asserting a fact, for it is a fact that Nero was not the last of the Roman emperors. Hence we are forced to conclude that there are some beliefs, namely all those which are false, whose objectives are not identical with facts. We might still continue to maintain, however, that the objective is identical with the fact in those cases in which the belief is true. But when we reflect that a false belief professes to express a fact just as much as a true belief, and that we cannot tell which objectives express facts and which ones do not by merely examining the objectives, it is difficult to see how we can maintain this. We seem to be compelled to maintain that in all cases of beliefs the objective is never identical with the fact, but that the objective stands in a relation of

correspondence to the fact when the belief is true and in a relation of non-correspondence to all facts when the belief is false.

There are therefore two alternatives open to us when we examine the relation of the objective of a belief to the fact. Either some of the objectives we assert are identical with the facts which we profess to be asserting, while some are not, or else no objective of a belief is identical with a fact. The latter alternative involves the supposition that there is no intrinsic difference between objectives, but that the truth or falsity of a belief depends solely upon an extrinsic relation of the objective of the belief to the fact or facts. Both of these alternatives may be divided into two further alternatives. In the case of those objectives which are not identical with facts the first alternative may maintain (*a*) that no constituent of such an objective is identical with a constituent of the fact, (*b*) that in every such case there is a constituent which is common to the objective and the fact. And similarly the second alternative may maintain (*a*) that no constituent of an objective is identical with a constituent of the fact, (*b*) that the objective and the fact always have a constituent in common.

Let us examine the first of these alternatives. This alternative is subject to a misconception which is traceable to the ambiguity of the term 'fact' which we have already noted. When we say that belief is a relation between a certain mental act called believing and a certain objective, which is identical with the fact, if the belief is true, and is not identical with the fact, if the belief is false, we do not mean that this view maintains that the objective of a belief is a particular of a certain description. The objective of the belief that Louis XVI died under the guillotine is not Louis XVI's death under the guillotine. For what could be the objective of the belief that Louis XVI died in his bed? It could obviously not be Louis XVI's death in his bed, because there never was such an event.[7] Shall we say then that the former belief has an objective while

[7] Cf. Bertrand Russell, *Philosophical Essays,* 175.

the latter has not? This is manifestly impossible, since otherwise we would be able to decide between truth and falsity merely by examining beliefs as to the presence or absence of an objective. We are therefore compelled to abandon the contention that the objective of a belief is an event of a certain description. Moreover, it is, strictly speaking, nonsense to assert that we believe Louis XVI's death under the guillotine. Such events are never the objectives of beliefs. It is possible that such events as related to a certain character may be said to be the objectives of beliefs. We may believe, for example, that Louis XVI's death under the guillotine was bloody, or that it was sudden, or that it was spectacular. But in all such cases the objective of our belief is an event as related to a certain character, i.e., the objective of our belief is a fact. In the case under consideration the objective of the belief that Louis XVI died under the guillotine is Louis XVI as related to a certain characteristic, i.e., it is the fact that Louis XVI died under the guillotine. On the other hand, the objective of the belief that Louis XVI died in his bed is 'that Louis XVI died in his bed' and this objective is not a fact. If we assume that the constituent 'Louis XVI' of the objective is identical with the constituent 'Louis XVI' of the fact, then Louis XVI must have both the characteristic of dying under the guillotine and of dying in his bed. However, his relation to the former characteristic is a fact, while his relation to the latter is not a fact. On the other hand if we assume that these constituents are not identical, then again there will be two different kinds of objectives—those which are facts and those which are not facts.

However, even if there is an intrinsic difference between those objectives which are facts and those which are not facts, this difference is at any rate not known. For in the contrary case we would be able to discover whether our belief were true or false merely by examining the nature of the objectives and determining this difference. And this is surely not the case. In order to know that the objective of a belief is a fact I have to rely upon something extraneous to the belief, namely an

actual perception of the fact. Of course, a fact could be the objective of a belief even if it were not known that the objective was a fact. Hence there is an intrinsic difference between those objectives which are facts and those which are not facts, but this intrinsic difference may not be ascertained by examining the objectives of beliefs.

The view under consideration has been criticized by Mr. Russell. "If we allow that all judgments have objectives," writes Mr. Russell, "we shall have to allow that there are objectives which are false. Thus there will be in the world entities, not dependent on the existence of judgments, which can be described as objective falsehoods. This is in itself almost incredible: we feel that there could be no falsehood if there were no minds to make mistakes. But it has the further drawback that it leaves the difference between truth and falsehood quite inexplicable."[8] Objectives are the entities to which we become related in the act of believing, and these entities are independent of whether anyone believes them or not. The evidence in favor of their independence is the fact that different minds may believe the same objective. Now in order to make possible the difference between truth and falsehood we have to assume that these objectives are of two sorts, the true and the false. Hence the difference between truth and falsehood does not reside in beliefs, but in the intentional objects of such beliefs. "If we adhere to the opinion," concludes Mr. Russell, "that there are both true and false objectives, we shall be compelled to regard it as an ultimate and not further explicable fact that objectives are of two sorts, the true and the false."[9] Beliefs are therefore true or false only derivatively, the truth or falsehood of a belief depending on the nature of the objective of the belief.

As a matter of fact, on the view under consideration I can no more be mistaken when I assert a false objective than when I assert a true objective. Since objectives are independent of the act of assertion or belief I cannot possibly be in error when I assert such an objective, for in either case I am asserting some-

[8] *Op. cit.*, 176. [9] *Op. cit.*, 176.

thing real. The assertion that Louis XVI died in his bed and that he died under the guillotine are both equally true, for I am asserting the two objectives 'that Louis XVI died in his bed' and 'that he died under the guillotine,' and both of these objectives are real. I do not pretend that this is a *reductio ad absurdum* of the view under consideration, for this argument presupposes a meaning of 'true' and 'false' which the view under consideration has rejected. According to the argument an assertion is true if it is the assertion of something real, and false, if it is not. According to the view under consideration an assertion is true if it is the assertion of a true objective, and false if it is the assertion of a false one. Nevertheless, this view is obliged to distinguish the sense in which the assertion of an objective is true from the sense in which it is the assertion of a false objective. It has to admit that an assertion is 'true' in the former case in a sense different from the sense in which it may be true or false in the latter. And this difference must depend on the fact that the difference between true and false objectives is an ultimate and not further analyzable difference between them.

In addition to the consequence of this theory which compels us to admit that there are objective falsehoods, there is another consequence which makes the theory quite untenable. The theory maintains that in the case of true beliefs the objective of the belief is a fact. If every case of believing were also a case of knowing this contention would be plausible. If the fact that I believe that tomorrow will be a fine day were also the fact that I know that tomorrow will be a fine day, then obviously the objective of the belief could be identified with the fact, for from the fact that I know that tomorrow will be a fine day it follows that 'tomorrow will be a fine day' is a fact. Every case of knowing is undoubtedly also a case of believing, but the converse of this is not true. There are cases of believing which are not also cases of knowing. Now in all these cases it does not follow from the fact that I believe that tomorrow will be a fine day, supposing that the belief is true, that 'tomorrow will be a

fine day' is a fact. If the objective of a true belief which is not also a case of knowing were a fact, then the fact that I am asserting this objective would enable me to know that the objective of the belief is a fact. And this is certainly not true in all those cases where believing is not also knowing.[10] We therefore conclude that the objective of a true belief is never a fact, except possibly when the belief is also known to be true.

The second alternative maintains that the objective of a belief is never identical with a fact. As usually stated this alternative assumes that the objective of the belief and the fact can have no constituents in common, that, in other words, the objective of a belief cuts us off completely from the external world to which our beliefs profess to refer. The objective has a function in belief similar to the function of the sense-datum in perception. The sense-datum merely represents the external physical object if the sense-datum has been causally conditioned by an external physical object, and does not represent any physical object if there is no causal relation to a physical object. And similarly the objectives of beliefs have a two-fold relationship with facts; they are either in a relation of correspondence to such facts or in a relation of non-correspondence to them. The argument by which this view is established is similar to the argument by which the theory of representative perception is established. In every belief, so the argument runs, our mind is related to something, namely, the content believed. Now that to which we are related in belief cannot be identified with the fact, because there are false beliefs. In the case of false beliefs we are therefore related to something which is not a fact. But inasmuch as there is no intrinsic difference between the content of a false belief and the content of a true belief, the objective is in either case not identical with the fact. This argument is in all respects analogous to the argument by which the doctrine of representative perception is established. In every case of perception our mind is related to something, namely, the object perceived. The object perceived cannot be identified with the

[10] Cf. G. E. Moore, *op. cit.*, 193.

physical object, because the object perceived may have characters which are incompatible with the characters that we attribute to the physical object. In these cases, therefore, we are forced to conclude that the perceived object is not identical with the physical object. But if we assume this in some cases we have to assume it in all cases, i.e., even in those cases where the perceived object has characteristics that are compatible with the characteristics of the physical object, for there is no intrinsic difference between the perceived objects in the one set of cases and the other set.

The second alternative has at least this advantage over the first, that it does not leave the difference between truth and falsehood unexplained. This alternative gives us at least an extrinsic criterion which seems to enable us to distinguish between truth and falsehood. An objective is true if it stands in a relation of correspondence to a fact, and false if it stands in a relation of non-correspondence to all facts. This alternative has only the one drawback that it does not permit us to ascertain when we have truth and when falsehood. For how do we discover that an objective is true, i.e., corresponds to a fact? Presumably when we come upon the fact and ascertain that it corresponds to the asserted objective. But this correspondence can be ascertained only in the assertion of a proposition, i.e., of an objective. In other words, we have to assert the objective that the objective in question corresponds to the fact. This objective may correspond to a fact, but this correspondence can never become known to us, inasmuch as belief is never related to the fact as its objective nor to any constituent of such a fact. This type of correspondence theory therefore makes knowledge impossible.

Mr. Russell believes that we can avoid the conclusion that propositions are asserted objectives if we abandon the assumption that judgment or belief is a relation of the mind to another entity, namely the objective. This assumption is committed to the doctrine that there are false objectives, or that there are objectives which correspond to no fact. Hence we are forced

to believe that there are entities in the world of which there really are no instances. "Whenever one gets to really close quarters with the theory of error," writes Mr. Russell, "one has the puzzle of how to deal with error without assuming the existence of the non-existent. Every theory of error sooner or later wrecks itself by assuming the existence of the non-existent."[11] An objective is obviously an entity of some kind, it must be there as an object for the mind to be asserted, and if we admit this we have to conclude that such entities exist, i.e., that there are instances of such entities. Mr. Russell rejects the analysis of belief as a relation between a mind and an objective, because it involves this assumption that the non-existent exists. The rejection, however, involves a very paradoxical consequence. If the assertion of a proposition is not to be analyzed into a relation of assertion or believing between the mind and an objective, it is illegitimate to ask such a question as "What do you believe?" For there is no single objective that you are asserting, there is no single objective to which your mind is related when for example you believe that Nero was the last of the Roman emperors.[12] Paradoxical as this sounds let us examine Mr. Russell's theory of belief.

The analysis of belief as a relation between an objective and a mind assumes that belief is a dyadic relation. Dyadic relations are relations that involve only two terms. Thus the relation 'greater than' is a relation that involves only two terms. Multiple relations are relations that involve more than two terms. Thus the relation 'gives' is a triadic relation; it involves three terms. The difference is apparent at once when we use these relations in a proposition. '*A* is greater than *B*' involves only the two terms *A* and *B*, but '*X* gives *Y* to *Z*' involves the three terms *X*, *Y*, and *Z*. Now the relation of believing, according to Russell, is not a dyadic, but a multiple relation. If so, the analysis of belief as a relation between a mind and an objective

[11] Bertrand Russell, "The Philosophy of Logical Atomism," *The Monist*, XXIX (1919):59.

[12] Cf. Bertrand Russell, *op. cit.*, 58.

must be false. "Every judgment," Russell says, "is a relation of the mind to several objects, one of which is a relation; the judgment is *true*, when the relation which is one of the objects relates the other objects, otherwise it is false."[13] Belief or judgment is thus a four-term relation at least between the three terms of the proposition and the mind. "The judgment that two terms have a certain relation R is a relation of the mind to the two terms and the relation R with the appropriate sense: the 'corresponding' complex consists of the two terms related by the relation R with the same sense. The judgment is true when there is such a complex, and false when there is not."[14] Thus when Othello believes that Desdemona loves Cassio, there is no single objective, namely, 'that Desdemona loves Cassio,' to which Othello's mind is here related, for the relation of loving does not really connect Desdemona and Cassio. Othello's credulous mind is here related to several objects. Desdemona, the relation of loving, and Cassio. In the act of belief these constituents are related to the mind in the sequence Desdemona, loving, and Cassio, i.e., the relation has been given its appropriate sense as proceeding from Desdemona to Cassio rather than from Cassio to Desdemona. It is to be noted that Desdemona, loving, and Cassio do not form a subsidiary unity in the complex that consists of these constituents and the mind. There is only the one complex consisting of these constituents and the mind related by the multiple relation of believing. We are now in a position to define the difference between a true and a false belief. One of the objects that are united into a complex by the multiple relation of believing is always a relation. In the belief this relation does not really relate the other two constituents so as to form a subsidiary complex in the complex of the belief. But it may be the case that in reality there is a complex in which this relation relates the other two constituents. If there is such a complex the belief is true, if there is not such a complex, the belief is false. Thus Othello's belief that Desdemona loves

[13] Bertrand Russell, *Philosophical Essays*, 181.

[14] *Ibid.*, 184.

Cassio is a four-term relation between Othello's mind, Desdemona, loving, and Cassio, where the relation of loving has been given the appropriate sense as proceeding from Desdemona to Cassio and not from Cassio to Desdemona. These four terms really do form a complex; the three terms Desdemona, loving, and Cassio do not form a complex within this complex. Now if these three terms should form a complex outside of this complex then Othello's belief would be true; if they do not, his belief is false. In the former case Othello's belief corresponds to a fact, in the latter it does not correspond to a fact.

This theory of belief has been rejected by Mr. Stout on the following ground. Mr. Stout writes:

> If I express my belief to another person by saying to him, 'A loves B,' he can determine whether my statement is right or wrong only by raising the question whether the meaning conveyed by the words 'A loves B' does or does not agree with what really exists. To this extent the old definition of truth as the agreement of *thought* with reality is clearly justified. That this is a necessary condition of truth seems to me obvious from the following consideration: It is admitted that in mere belief the actual fact which determines between truth and falsity is not itself present to thought; if then, what corresponds to actual fact were not present to thought, it would follow that truth consists in a correspondence between something which the believing mind does not think of at all and something else which it does not think of at all.[15]

If then Mr. Russell's correspondence theory involves that the judgment-complex is not thought of at all, he must clearly hold that truth consists in a correspondence between something which the mind does not think of at all and something else which it does not think of at all. Truth and falsehood, according to Russell, consists in a correspondence or non-correspondence between the judgment-complex, which consists of the mind and at least three other terms, and another complex, namely a fact, as specified in detail above. The three terms other than the mind do not constitute a unity. This is expressly affirmed when it is denied that belief is analyzable as a dyadic relation between a mind and an objective. Since there is no unity consisting of

[15] G. F. Stout, "Mr. Russell's Theory of Judgment," *Proceedings of the Aristotelian Society*, n.s., XV (1914–1915):335.

the three terms other than the mind, the mind cannot be aware of them as a unity. But neither does the mind seem to be aware of the whole complex consisting of the three terms and the mind. When for example Othello believes that Desdemona loves Cassio there is no complex before his mind consisting of Desdemona, the relation of loving, and Cassio, because there is no such complex. But neither is there a complex before his mind consisting of these three terms as related to his mind by the relation of believing. The complex that corresponds or does not correspond to the fact is therefore not before Othello's mind. It follows therefore that truth must consist in a correspondence between a complex which the mind does not think of at all and a fact which it does not think of at all. The only alternative which would avoid this conclusion would be to accept the proposition that whenever there is a judgment-complex, the mind is also aware of this complex. For example, whenever Othello believes that Desdemona loves Cassio he must also be aware of his mind as related to Desdemona, loving, and Cassio by the multiple relation of believing.[16] And this is, to say the least, a dubious proposition. But if it is rejected, and "if truth consists in a correspondence between the judgment-complex itself and actual fact, truth must be independent of any awareness which we may have of the judgment-complex."[17] And accordingly Stout concludes: "It would seem that, according to Russell, the truth of a belief consists in a correspondence between something which, at any rate, in so far as it is a believing mind, it does not think of at all and something else which it does not think of at all."[18] Mr. Russell's analysis of belief as a multiple relation between the mind and at least three other terms, one of which is a relation, must therefore be rejected. And we are therefore once more thrown back upon the assumption that belief is a dyadic relation between a mind and an objective. Mr. Russell's theory must be rejected quite independently of the objection against it that we have discussed, for it affirms what is transparently false.

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[16] Cf. Stout, *op. cit.*, 343.

[17] *Op. cit.*, 343.

[18] Cf. Stout, *op. cit.*, 343.

When Othello believes that Desdemona loves Cassio his mind is related to a certain complex consisting of Desdemona and Cassio related by the relation of loving, and Othello thinks of these two constituents as related by this relation.

Mr. Stout's analysis of belief involves the supposition that belief is a dyadic relation between the mind and an objective. The objective of a belief is never, in belief as such, identical with a fact. This is the supposition of our second alternative, which we have rejected in so far as it is taken to mean that no constituent of an objective is identical with a constituent of the fact. But we have so far left unexamined the second interpretation of which this alternative is capable, namely that the objective and the fact always have a constituent in common. Mr. Stout's theory of belief maintains that this is always the case. Let us examine this theory.

Mr. Stout has set down a list of requirements which any satisfactory theory of truth must fulfill. The first three of these he shares with Russell. (*a*) Truth and falsehood must be defined as properties of belief or judgment. Hence if there were no minds that judge or believe there could be no truth or falsehood. (*b*) The account we give of the truth of a belief must not preclude the possibility of a belief being false. If we do give an account of the truth of belief which makes it impossible for a belief to be false, we have not succeeded in constructing an acceptable theory of truth. (*c*) The truth or falsity of a belief must be recognized as depending on something which lies outside of the belief, namely a fact. Truth must therefore be defined as correspondence between belief and fact and error as non-correspondence between belief and fact. "The actual fact," writes Mr. Stout, "which makes the belief true or false can not as such be present to the mind of the believer in the act of believing as the object of belief, i.e., that which he means to assert. For if this were so he could never assert anything that was not actual fact and there would be no possibility of error."[19] (*d*) The correspondence between belief and fact which

[19] *Op. cit.*, 334.

constitutes truth must be equivalent to or involve a correspondence between something which is before the believing mind in the act of believing, i.e., the objective of the belief, and the fact on which the truth of the belief depends; and similarly, the non-correspondence between belief and fact which constitutes falsehood must be equivalent to or involve a non-correspondence between the objective of the belief and the fact on which the falsehood of the belief depends.

(*e*) What is thus thought of in a true belief differs as such from the actual fact only in one respect. It differs only in not being actual fact. This becomes evident when we consider that any other difference renders the belief false. . . . . It follows that the object before the mind in true belief differs from the actual fact not in its nature but in the kind of being which belongs to it. . . . . I do not say that the object of thought in mere belief can not be actual fact. What I do say is that the sort of being which it must have in order to be an object of thought is not that which belongs to actual fact. It does not follow that what has this sort of being can not also be actual fact. All that is required to account for the possibility of error is the assumption that it may or may not be actual fact. On the other hand there is no inconsistency in supposing that what really exists not only may but always does also have the kind of being which is presupposed in being an object of thought. (*f*) The correspondence of belief with actual fact must be thought of and asserted by the believing mind. There can be no truth or error unless something not only is actual fact but is taken to be actual fact. If it is not actual fact, the taking of it for actual fact is a mistaking it for actual fact. There can be no truth or error unless the mind means or intends something to be real.[20]

With regard to the requirement that the truth or falsity of a belief must be recognized as depending on something which lies outside of the belief, namely, a fact, Mr. Stout makes the following observation:

The position requires to be very carefully and guardedly stated. We have no ground for affirming that no actual fact which is in any way relevant to the truth or falsity of a belief can be present to the mind of the believer in the act of believing. All that we are justified in saying is this: if and so far as a belief is capable of being either true or false, those precise and specific features of actual fact on which depends the decision between these alternatives cannot, as such, be present to the believing mind as the object of the belief.[21]

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[20] Stout, *op. cit.*, 334 *et seq.*

[21] *Op. cit.*, 334.

Mr. Stout's meaning seems to be this: In every belief there is a reference to some definite object either by direct perception or by description. This object is the 'fact' that is relevant to the truth or falsity of the belief about this object. For in a belief this object is not merely directly perceived or descriptively referred to, but a further assertion is made about it, namely, that it has a certain property or that it stands in a certain relation. Inasmuch as in belief we are not directly aware of the properties of things or of the relations in which they stand, this assertion is capable of being either false or true. In every belief, therefore, we can distinguish a demonstrating and a characterizing function. Through the former the belief demonstrates or denotes a certain existent or existents, through the latter it attributes a certain quality to it or them, or asserts that they stand in a certain relation. The existent denoted either stands in the relation or has the qualities asserted of it or it does not. In the former case the belief is true, in the latter it is false.[22] When therefore Mr. Stout asserts that in every belief, whether true or false, there is some actual 'fact' present as the object of belief which is relevant to the truth or falsity of the belief, he does not employ the term fact in the strict sense in which we have defined it. In this connection he employs it in the sense of 'particular existent.' It is this particular existent which must have those precise and specific features, i.e., must be a constituent of the fact, on which the truth or falsity of the belief depends. In so far as the belief is not known to be either true or false, this object may only be known as a constituent of another fact, namely, of the belief.

This ambiguity of the term 'fact' becomes quite plain in Mr. Stout's comment on the last requirement. This requirement stated that the correspondence of the objective of belief with actual fact must be thought of and asserted by the believing mind. In other words, the objective of belief must be thought of and asserted as being actual fact. This requirement seems to raise a difficulty. How can the objective of belief be taken as

[22] Cf. C. D. Broad, *Mind*, n.s., XXX (1921):319.

actual fact, unless the actual fact itself is present to the mind? But if so, the present requirement would contradict the requirement we mentioned before that the actual fact is not present as the objective of the belief. Mr. Stout's way of avoiding this contradiction is as follows:

> When we say that in mere belief the actual fact itself cannot be before the mind, the reference is to the belief only in so far as it is capable of being false as well as true. Hence the reference is only to those precise and specific features of actual fact on which depends the decision between truth and falsity. It is not implied that no actual existence or none that is in any way relevant can be present to thought or perception. On the contrary, some real existence must be apprehended, and it must be relevant in the sense that it includes those precise and specific features of actual fact which determine whether the belief is true or false. It must be before the mind of the believer as the object of a possible question admitting of alternative answers.[23]

Here again the 'fact' that is before the mind in belief is a particular, which is a constituent of a fact in our sense of the term. But Mr. Stout seems to think that there is also a fact in our sense of the term which is involved as a constituent in belief. For he goes on to say: "It (namely some real existence) must be known to include actual features of such a nature that they make the belief true or false."[24] In other words, whenever I express belief in a proposition, the fact which makes the belief true or false is not a constituent of the belief, provided the belief is not known to be true. But in all such cases there is a fact implied by this fact which is an objective of the belief, or is involved in it. This is the fact that the object demonstrated or denoted by the belief has a certain general nature, capable of alternative specifications. Thus suppose, for example, that I am aware of a match-box either by direct perception or by description and that I make the assertion that this match-box is empty. In order to be aware of the match-box in either of these ways I need not be aware of all its specific properties. In particular, I need not know whether it is full or empty. But if and in so far as I am aware of the match-box at all I am aware

[23] *Op. cit.*, 338. [24] *Op. cit.*, 338.

of it as having an actual contents which has the general characteristics of anything that may be a candidate for contents of a match-box. Its contents must consist either of specific physical objects satisfying the general characteristics as to size, etc., which all possible contents of this match-box must possess, or else of empty space, i.e., its contents must consist in the absence of material objects. In short, my belief that the match-box is empty involves an objective which is a fact, namely, that the match-box has a general nature which is capable of alternative specifications, among which is included the specification that it is empty. However, when I express my belief that the match-box is empty I cannot be said to be aware of the fact that the match-box is empty, provided my belief is true, because I am not aware of the specific nature in which the general nature of all possible contents for a match-box exhibits itself.

If the assumption that belief always involves a reference to the logical subject or subjects of the proposition be accepted, a false judgment, and of course also every true judgment, in so far as such a judgment is not *known* to be true, is subject to the following conditions: The logical subject or subjects must be capable of alternative determinations. One of these is selected by the believing mind as an alternative which is fulfilled, or, in the case of negative judgments, one which is not fulfilled.[25] This condition raises two questions. "(*a*) What sort of being belongs to a possible alternative? (*b*) Why does belief in a possible alternative's being fulfilled, in distinction from the mere supposal of its being fulfilled, involve directly the antithesis between truth and error?"[26] We shall discuss these questions in order.

It is sometimes supposed, e.g., by Mr. Russell, that nothing in the external world is denoted by the word 'or' of the disjunctive judgment. Now this would certainly be the case if all existence were particular. But if we concede that particulars

[25] Cf. Stout, "The Object of Thought and Real Being," *Proceedings of the Aristotelian Society,* n.s., XI (1911):190.

[26] *Op. cit.,* 191.

share in a common nature and that therefore there are classes of particulars, there is no incongruity in the assumption that alternation is a characteristic of reality. For alternation is a characteristic of universals. To be a universal means to be capable of alternative determinations. Thus if I assert that "This match-box is either empty or full" I imply that the match-box determines a region of space, and a region of space may be either occupied by matter or not occupied by matter. Accordingly, writes Mr. Stout,

> If generalities belong to the real constitution of the universe it follows that alternative possibilities must also belong to the real constitution of the universe. For it is inherent in the very nature of what is general to admit of alternative specifications. On the other hand, there are no alternative possibilities which are not essentially relative to some generality as their basis.[27]

It follows that every possibility is relative to a set of general conditions either implied or asserted. An alternative which may be a possibility in relation to one set of conditions may be an impossibility in relation to some other set. Relative to his general spatial properties it is possible that a man who is half a mile high should be able to live and walk erect. But this is not possible relative to the mechanical properties of man. In so far as a man is characterized by certain general geometrical properties, these properties are capable of a number of alternative specifications; but in so far as he is also characterized by certain general mechanical properties, some of these alternatives must be excluded as incompatible with the specifications of which the general mechanical properties are capable.

It remains to consider the second question. The difference between supposal and belief cannot consist in a difference between the objectives of supposal and belief. "It will not do to say that in mere supposition we only think of an alternative, whereas in belief we think of it as fulfilled. For we cannot think of an alternative at all without thinking of its being fulfilled. A possibility and its fulfillment are so related that the

[27] *Op. cit.*, 192.

thought of the first involves the thought of the second."[28] Why, nevertheless, is belief subject to error, whereas supposal is not subject to error? Mr. Stout gives the following answer to this question:

> First, some reality must be present to thought, and this reality must have and be thought as having a general nature capable of various alternative determinations. In the thought of this reality, and the belief in it, there is no error; neither is there error in the belief that some one at least of all its possible alternative determinations is fulfilled, provided no decision is made as to which this is. Nor, again, is there any error in merely thinking of some special alternative as such, which, of course, includes the thought of its being possibly identical with the fulfilled alternative. Error, or the risk of error, first arises when the mind not only thinks of a possibility being fulfilled, but also *believes* in its being fulfilled. But this does not involve any new object of thought; it only involves a new mental act in relation to the same object.[29]

We said earlier that the analysis of belief as a relation between a mind and an objective limits us to two alternatives, (*a*) that the objective is identical with the fact if the belief is true and is not identical with the fact if the belief is false, (*b*) that the objective is never identical with the fact, but corresponds to a fact, if the belief is true and does not correspond to any fact if the belief is false. We have rejected the first of these alternatives and we have rejected the second in so far as it commits us to the doctrine that the objective of a belief can have no constituent in common with the constituents of the fact on which the truth or falsity of the belief depends. Mr. Stout's theory of belief is an illustration of the second alternative. According to Mr. Stout the objective of a belief in so far as such a belief is not known to be true is never identical with a fact. But this view is itself capable of two alternatives. Either no constituent of an objective is identical with a constituent of the fact, or else the objective and the fact on which the truth or falsity of the belief depends always have at least one constituent in common. Mr. Stout has evidently chosen the latter alternative. According to him the objective of belief always has

[28] *Op. cit.*, 191.

[29] *Op. cit.*, 195. Cf. Stout, *Mr. Russell's Theory of Judgment*, 338.

at least one constituent in common with the constituents of the fact on which the truth or falsity of the belief depends. When we believe that a certain thing has a certain property there is one constituent and when we believe that a thing stands in a certain relation to another thing there are two constituents which are identical with the constituents of the fact on which the truth or falsity of these beliefs depends. There may of course be more than two constituents. This happens when the property is asserted of a plurality of objects or when the relation involved in the belief is multiple instead of dyadic. Let us take the simplest case where a property is predicated of a single object as illustrative of the rest. This object then is both a constituent of the fact and of the objective of the belief. The other constituent of the fact and of the objective is a quality. These qualities are alternative specifications of a general quality. The object must be *known* to possess this quality. Every belief therefore involves an objective which is also a fact. This general property which is known to be a property of the object must be known to be capable of alternative specifications. In belief one of these is selected as a constituent of the objective.

Now follows the definition of the truth and falsehood of beliefs. When the alternative selected as a constituent of the objective is identical with the specific quality which is a constituent of the fact, the belief is true, otherwise it is false.

> When we believe in a possibility being fulfilled, our belief is false, when the alternative asserted is other than any fulfilled alternative. The belief is true when the alternative asserted is coincident with a fulfilled alternative. . . . . When an alternative before the mind is other than a fulfilled alternative, the belief is in disagreement with reality. It does not agree with the reality to which the mind itself refers as its standard in the act of believing, as what requires to be specified in some determinate way.[30]

This definition of truth and falsehood pretends to make truth and falsehood properties of beliefs. Let us examine whether Mr. Stout's theory satisfies his own requirement that truth and falsehood must be defined as properties of beliefs. If the objective of a belief were independent of belief Mr. Stout's

[30] *Op. cit.*, 195 f.

theory would not satisfy this requirement. For in that case truth and falsehood would depend solely on the relation of the objective to the fact. Beliefs could therefore be true and false only derivatively. If, on the other hand, the objectives of beliefs depend on their relation to a believing mind, then beliefs would be true or false primarily, and the objectives of these beliefs would be true or false only derivatively. It might be contended that the evidence in favor of the independence of the objective of a belief is a plain case. The objective of the belief is the same, whether it is you who believes that Nero was the last of the Roman emperors, or whether it is I. The objective of the belief seems to be quite indifferent to whether it is believed by you or by myself. In short, belief seems to be an external relation between a mind and an objective. And, moreover, Mr. Stout does not deny that the objective of a belief may be a fact. This is admitted in those cases in which the belief is known to be true. Indeed, even when the belief is false, it always involves an objective which is also a fact. Nevertheless, the situation is not quite as hopeless as it may seem. In order to make this plain, let us confine our attention to false beliefs for a moment. The doctrine under consideration asserts that in the case of false beliefs there is one constituent of the objective which is identical with a constituent of the fact. Also, there is a fact, implied by the objective in question, which is an objective of this belief. Thus, I may make the assertion "The desk in my office is black." The subject of this proposition demonstrates a certain constituent in the external world, namely my desk, which is identical with a constituent of the objective of my belief. This belief also involves another objective, implied by the objective of my belief, which is a fact, namely the fact that my desk is colored. "Being colored," I know, is capable of a number of alternative specifications, one of which, I know, is the alternative that characterizes my desk. When I believe that my desk is black, I am attributing one of these alternatives to my desk. Now here surely there is no need to assume that this alternative is a property of my desk inde-

pendently of my mind. The desk in my office that is black does not in fact exist, and therefore, if the objective of my belief has a constituent that is identical with a constituent of the fact, it cannot possibly be independent of my belief. On the other hand, if the objective is independent of my belief, it cannot possibly have a constituent that is identical with a constituent of the fact.

Unless, therefore, we give up the assumption that in belief we are directly related to external reality and not indirectly by way of an objective that has no constituent in common with the external world, we have to give up the assumption that the objective is independent of belief. As a matter of fact, as we have already pointed out, we cannot possibly give it up, unless we consent to make knowledge of an external world impossible. The case in favor of keeping this assumption can be made even stronger. For the assumption that in belief we are directly related to an external world is a necessary assumption of any theory of truth. Truth and falsity cannot consist in the mere correspondence or non-correspondence between an objective and a fact.

> Truth [says Mr. Stout] does not consist in the mere agreement or correspondence of what is thought with what really is, and error does not consist in the mere disagreement or non-correspondence of what is thought with what really is. To constitute truth or error, the agreement or disagreement must be an agreement or disagreement not with any reality but with some reality which the mind means or intends to describe or characterize in the act of judgment. . . . . What really is must be rightly or wrongly characterized, and for this to be possible what really is must itself be directly present to thinking consciousness and not something which merely represents it or stands for it.[31]

Unless therefore we accept the assumption that the objective of belief has at least one constituent in common with the constituents of the fact on which the truth or falsity of the belief depends, the distinction between truth and error loses all meaning. These considerations may seem obvious, but if we accept them, the definition of truth and falsity as correspondence or non-correspondence between objective and fact, where the objective

[31] *Op. cit.*, 189.

is supposed to have no constituent in common with the fact, becomes impossible. As Mr. Stout observes, the proposition "This match-box is empty" is not made true if we find some match-box that is empty, and is not rendered false, if we find some other match-box that is full. This belief is rendered either false or true if the match-box intended or demonstrated by the belief is either full or empty. But this means that the objective of the belief has a constituent in common with the constituents of the fact on which the truth or falsity of the belief depends.

The assumption therefore that belief involves a direct reference to external reality is incompatible with the assumption that the objective of belief is independent of the believing mind. The objectives of false beliefs at any rate are relative to the minds that believe them. But how, we ask, can this be true? How can my desk have the characteristic of being black when in fact it is brown? Does the desk possess characteristics in relation to my mind which it does not possess in fact? And if it does possess these characteristics in relation to my mind how can my belief be false? Now once we admit that the objective of my belief that my desk is black has a constituent which is identical with a constituent of the fact on which the falsity of this belief depends, there can be no question but that the desk has this characteristic in relation to my mind. The fact is indeed undeniable; for I need only examine the objective of my belief in order to determine what characteristics I am attributing to my desk. But of course the fact that the objective of my belief is a desk which has the characteristic of being black is not questioned. We are asking how it is possible that one and the same desk can have the property of being both brown and also black. If these properties are intrinsic or absolute, there is no escaping the conclusion that the objective of my belief can have no constituent in common with the constituents of the fact, i.e., I cannot be said to be referring to the physical desk in my office when I believe that it is black, for a desk that is black cannot be identical with a desk that is brown. If therefore we insist on the contention that these constituents are identical, we

cannot escape the conclusion that these properties belong to the desk only relatively. The property of being black is not a property which the desk has absolutely or intrinsically, i.e., independently of its relation to anything else, but is a property which it has only in relation to a mind.

The desk is intrinsically capable of being black, i.e., it has a general property which is capable of alternative specifications, among which is the specification that it is black. In so far as the desk has the general property it is also related to all the alternative specifications of which this general property is capable, only one of which, however, is actualized in the desk. Relatively to a believing mind, however, this general property may assume a specification which is not actualized in independence of this relation. "Every actual occasion," writes Whitehead, "is set within a realm of alternative interconnected entities. This realm is disclosed by all the untrue propositions which can be predicated significantly of that occasion. It is the realm of alternative suggestions, whose foothold in actuality transcends each actual occasion."[32] These suggestions, i.e., alternatives, whether true or false, transcend each actual occasion, e.g., my desk, for they may be found in other actual occasions. Actuality, therefore, is not opposed to possibility. "Every actual occasion is defined as to its character by how these possibilities are actualized for that occasion. Thus actualization is a selection among possibilities."[33] Thus any actual character is related to other characters which may either be actualized in other instances or may not be actualized, i.e., may remain mere possibilities. Nevertheless, through their relation to actualized characters they are not completely severed from existence. We can go even further than this. In so far as a mind believes such characters to be the property of some actual occasion, they are actualized in that occasion. But they characterize that occasion only in relation to a believing mind and not in independence of this relation. Independently of this relation they are and remain mere possibilities.

[32] A. N. Whitehead, *Science and the Modern World*, 228.
[33] *Op. cit.*, 229.

A possibility may thus become actualized in at least two ways: Either by being actualized in the course of the events of external nature, or by being actualized through its relation to a believing mind. The possibilities actualized in the context of external nature are however not always identical with the possibilities actualized in the context of a believing mind. In the case of error nature, so to speak, has actualized a possibility which is not identical with the possibility actualized by a believing mind. Error, therefore, arises as a consequence of the assumption that this identity always exists.

We are now in a position to deal with the last question. If, as has been maintained, the desk really has the characteristic of being black in relation to my mind, how can I possibly be in error? If I assert that the desk to which my belief refers is black I am merely asserting what is the case, for according to the supposition the desk is black in relation to my believing mind. And therefore no belief can be false, for every belief produces the condition of its own validity. This objection has been raised by Mr. Stout against Mr. Russell's theory of belief in case that theory should involve that the constituents of the judgment-complex other than the mind really do form a subordinate unity in the judgment-complex.[34] However, if this really is an objection, I do not see how Mr. Stout's own theory is immune to it. For according to him "we can not think of an alternative at all without thinking of its being fulfilled," and this contention involves that the objective of belief is a unity. But whether Mr. Stout agrees to the implications that are involved in his theory or whether he believes that the consequences we have drawn from his theory are objectionable is immaterial. For the objection is invalid. In order to show this let us examine once more the difference between belief and supposal. Belief and supposal agree in this respect: whether I believe that my desk is black or whether I merely suppose this, in either case the desk has this property only in relation to my mind. But also, in either case, I assume that the desk has this property

[34] Stout, *The Object of Thought and Real Being,* 204.

independently of my mind, i.e., that the objective is identical with the fact. However, in the case of belief I either explicitly or implicitly assert this identity, whereas in mere supposal this identity is not asserted. A belief is therefore false, if the objective of the belief is not identical with the fact, and it is true if the objective of the belief is identical with the fact. Thus my desk has the property of being black in relation to my mind, but inasmuch as I believe this objective, I assert that it is identical with the fact, i.e., that the desk is black also independently of its relation to my mind. On the other hand, if I believe that the desk is brown, the desk has the property of being brown in relation to my mind, but inasmuch as I believe this objective, I assert that it has this property independently of the relation of the desk to my mind. And since the desk has this property independently of its relation to my mind, the belief is true.

Belief therefore involves a triadic relation between (*a*) the constituent or constituents of the objective which are identical with the constituent or constituents of the fact on which the truth or falsehood of the belief depends, (*b*) the property which is asserted of this constituent or these constituents, or the relation which is asserted to hold between them, and (*c*) the mind. Such a constituent is characterized by the asserted property, or such constituents stand in the asserted relation primarily only in relation to the mind. But in belief we abstract from this relation to a mind, and we assume that these constituents have the asserted property or stand in the asserted relation simply when they do so only in relation. Of course such a constituent may be characterized by the property asserted of it or stand in the asserted relation also independently of the relation of this constituent or these constituents to a mind. This is the case when the belief is the assertion of a fact, i.e., when the objective of the belief is a fact. But, we might ask, how can the objective of a belief be identical with a fact, if the objective is relative to a mind, since facts are by admission not constituted by their relation to a mind. Moreover, we said earlier that the

objective of a belief is a fact in all those cases in which the belief is known to be true. The difficulty is easily disposed of. In so far as a belief is true or in so far as a belief is also known to be true, the objective of the belief is relative to the mind. But it is in neither of these cases *merely* relative to a mind. The property attributed to the object or the relation in which it is asserted to stand is actualized not merely in relation to a mind, but also independently of this relation.

Truth and falsehood, therefore, are properties of belief, belief consisting in the assertion of an objective. Inasmuch as the objectives of beliefs exist only in relation to a believing mind, beliefs are not true or false merely derivatively, i.e., because the objectives of the beliefs are true or false. Truth and falsehood are indeed properties of *asserted* objectives, but inasmuch as objectives are relative to a mind and since the act of assertion occurs only in a mind, truth and falsehood arise only when there are minds that have beliefs. We cannot even say that objectives as such, i.e., in abstraction from their relation to a mind, are either true or false, since the same objectives may be present in mere supposal and supposal is neither true nor false. There must be present the belief in or the assertion of the objective before the distinction between truth and falsehood arises. Nevertheless it is convenient and not necessarily misleading to predicate truth and falsehood of the objective itself. An objective, even of a mere supposal, is false, if it is false in case I should believe it and it is true in the contrary case. If we remember that the act of belief or assertion is essential in the definition of truth and falsehood the predication of truth and falsehood of the objective in abstraction both from the act of assertion and its relation to a mind is unobjectionable.

THE INACCESSIBILITY OF TRUTH

BY

D. W. PRALL

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If the word truth has any meaning at all it would seem to be the case that truth can be appropriately predicated of at least some judgments as expressed in propositions. Truth is a secondary adjective, an adjective which, instead of characterizing substantives, characterizes propositions themselves. And if truth is to be accessible anywhere, I suppose that we must have actual certainty that the predication of this adjective in at least some particular cases is correct. To say that truth is accessible is to say that some knowledge is certain or that sometimes we not only believe that we know but are certain of our knowledge. Now it seems to be correct to say that yesterday preceded today, that human beings experience their own feelings, that prime numbers are only some of the integers, that Newton formulated the law of gravitation, that the great war began in 1914, that architecture is not poetry, that prices fluctuate, and that if some literature is philosophy, some philosophy is literature. In logic, in mathematics, and in history, as also in aesthetics, in economics, and in direct personal experience, as well as in the region of temporal and spatial relations, we all make statements that are not questioned by any one. If we could not make such statements, we could not communicate in discourse at all, since with no basis of agreement on data or principles there would be no mutual understanding of discourse and no way of defining an issue, much less of arguing one.

It will also be admitted that what we wish to arrive at by way of argument or discussion is not our commonly accepted data or the simple logical principles that we agree on from the beginning, but knowledge of principles or of facts not already

granted. And notoriously we do not too often agree upon conclusions. If our agreement in the first place on data and principles were certain knowledge of the truth, it seems to me that our later disagreement or acknowledged ignorance would be not merely paradoxical, but genuinely unaccountable; and the obvious inaccessibility of truth in these more complicated, or more advanced or derivative judgments is, I think, evidence of the fact that we do not know the truth and cannot recognize the truth as such by any marks that it might be supposed to bear on its face in the simplest cases, which we begin with or take for granted.

Since I have already given typical examples of what we do consider that we know with certainty, this may sound trivial, perhaps, or if taken seriously, destructive. What is worse, it can easily be made out—by a little inattention to the assertions and no very accurate analysis of their apparent conflict—to involve an abortive contradiction. For to assert that no statement is certainly true seems to claim truth for this statement, and it is mere sophistry to claim for statements surreptitiously a character that one explicitly denies to them. But this well-worn and diverting criticism is disingenuous. A skeptic whose skepticism consists in doubting the accessibility of truth need not be accused of doubting the truth of true statements or of asserting the truth of doubtful ones, when all that he asserts to be dubitable is the supposedly certain knowledge that the statements are true, when what he asserts is his doubt along with its grounds. If, for example, I knew with certainty that the other papers in this series were in error, I should say so. And if I had adequate grounds for knowing this knowledge true, surely these would be such as could have been discreetly communicated to the writers to forestall their erroneous statements and to save their pains. But on any large issue we expect difference of opinion, and studious attention and honest thinking often fail to remove it. If we have agreed to give up the doctrine of the divine right of kings or the Christian doctrine of the literal creation of the world out of nothing, it is not that we agree on

the truth about sovereignty or creation. It is not that our science or our logic has found the truth in these matters, and that we now know it with certainty. It is because our interests and our practice have, for the time being, at least, disposed of these doctrines as unimportant to us. As to the nature of sovereignty and as to the ultimate nature or origin of our world there are more different opinions than ever and more complicated ones.

But my present obligation is to show that in such cases as I have cited we do not have access to the truth, and having access to truth means not merely having in mind judgments that may for all we know be true, but really being certain that they *are* true. If we cannot be certain, the truth of them remains inaccessible, and, as I think, not by accident, but because of the nature of truth, the nature of discursive judgment, and the nature of human minds.

I shall try first to make this out indirectly by showing that important conclusions based upon such apparently true statements fail often even to seem true and are commonly admitted to be doubtful. Then I shall try to show that the processes of reasoning by which derived conclusions are drawn from data and principles are never absolutely known to be valid. This will indicate two things: first that the derivative statements rest for their degree of acceptableness not on necessary implicative connections—that there are no necessary logical connections in discourse—and secondly, that the acceptableness of all derivative statements is due to exactly the sort of direct compulsive intuition that satisfied us in the case of our non-derivative elementary judgments. Finally I shall attempt to indicate that this same assurance or lack of assurance as to whether or not we have the truth in derivative judgments is present in the cases of simple non-derivative judgments, whether these are principles of inference or particular statements of so-called facts of perception.

This would sufficiently justify the assertion that truth is inaccessible in its very nature; and if I thought this assertion

unimportant because I do not certainly know it to be true—on the ground, that is, that *its* truth is inaccessible—I should have finished a completely thankless and discouraging essay, as forlorn an undertaking as Mr. Adams suggested. But the assertion that truth is inaccessible does seem to me of some importance and not altogether disconcerting. That I cannot know for certain whether it is true or not does not make it seem worthless, and I should lay claim to no special piety in the attempt to make it clear, and if possible, convincing. This attempt is simply to show that accessible truth is in the precarious position of Locke's substance, that it is, in Berkeley's phrase, a plain repugnancy. But as substance will not down, so of truth. It remains an ideal, though I think not a directly applicable criterion of discourse. What we demand is grounded faith. My point is that that is all that we have ever had in the very best of what we call knowledge and all that we need, and that the grounding, instead of being the basis for demonstration or capable of giving certainty, lies in instinct, interest, and existential experience, simply as acted upon or felt or had.

It is of discourse itself, however, that truth is regularly predicated. Discourse claims to have meaning and importance and it is usually said rightly to claim truth. It is this last form of statement that seems to me as unwarranted in fact as it is unnecessary to the significance of theory. If discourse has significance or weight, I think that it is on other grounds, and if, as I take it Pragmatism does, we supply grounded faith in place of truth, faith grounded in existence, not in discourse, then I think it not best to say that we have now defined truth properly, but that we have seen that truth is not what is of primary importance to discourse, nor what we aim for in significant theory. For what *is* of primary importance we want a name that suggests the actual ground of our assurance, instead of claiming, by the use of a traditional word, a traditional ground that we cannot have, the realm of absolute truth itself.

This criterion of the significance or value of discourse is neither new nor unusual. If, for example, Mr. A. E. Taylor

thinks that Thomas Aquinas is a great philosopher, it is, as he says, because he finds that Aquinas is both original and critical, and that originality and sobriety of critical judgment are the tests of all thinking. But neither of these tests is the trueness of what Aquinas said or thought. Originality lies in fresh imaginative power and genuine intellectual effort; critical adequacy lies in a sense for reality. And for Mr. Taylor it is this sense for reality that is the final criterion. Erigena made a greater and more imaginative synthesis than Aquinas. If he failed to reach the eminence attained by St. Thomas it was because Erigena—I am still following Mr. Taylor—had not a sufficient sense for reality.

Now a sense for reality is not the criterion of truth. A sense for reality does not always make its appearance in discursive knowledge. Our most momentous judgments are often so nearly unconscious and so entirely unworded that they appear rather as quick action or presence of mind. Here the less discourse the better, as when we turn suddenly to avoid being seen, or step back quickly to save our lives at a street corner, or jump from a slipping cable-car. A sense for reality is a feeling of intimacy with the real world and the urge to keep on intimate terms with the world's specific nature in various actual and particular circumstances. Certainly this desire is the animating spirit of significant discourse. It is what Mr. Dewey applies to the problems of China or Mexico or Russia and brings home again and again to apply to social relations and education in the United States. Many a lesser thinker has shown to his own satisfaction that Mr. Dewey cannot be speaking the truth. His discourse as printed has over and over again been found to be at odds with itself, inconsistent to the point of contradiction. And of truth one can surely say that it is coherent; for though this is not a sufficient condition of truth, it seems to be a necessary one. Our grounded beliefs on the other hand, are often inconsistent and irrational; and while it is not perfectly or permanently satisfactory to a rational mind to hold inconsistent beliefs, human minds do so quite generally, and, so far in history, philosophers

do so characteristically. In fact the strict consistency of a system would seem to vary almost directly with its aloofness from reality. If modern Idealism cannot be refuted, this seems after all to do little to keep it acceptable to men. If Leibniz is unsatisfactory and inhuman in his complacent contemplation of eternal damnation and torture for at least some of us in the best of all possible arrangements, it is not on the ground of inconsistency that we disregard his conclusions on the matter. But when in Mr. Dewey inconsistency rules out the very possibility of truth, we still find significance in his writing. What we demand in discourse, then, is just such significance; and often in perfectly consistent discourse we find little of it. Discourse expresses beliefs felt to be warranted, felt so by creatures in nature, interacting in those natural processes that are the events of natural history and, in some cases, events consciously experienced only as in their qualities, events the descriptions of which discourse sometimes attempts to give.

The nature of linguistic discourse itself, the medium in which belief or knowledge can be held and expressed, or judgments pronounced, is perhaps worth dwelling on. If gesture and sign-language are often as significant, they have at least some of the same limitations. We do not always realize the purely existential and even accidental nature of all the kinds of discourse, being interested, as we are, in its significant import. But discourse may be expressed as well in other arts as in language, that of linguistic symbolism, and in these arts its specific, independent character is clearer. A poet discourses numbers, a musician sounds, a painter colored forms, a sculptor plastic ones. Even an architect, who builds material objects out of stone or steel or wood is in so doing following out his own imaginative discourse. His style often expresses his individuality to the point of identifying him in his works. We do not attach to works of art as such any logical validity or any factual reference, but that they communicate emotions and express personal character, we all believe, though this is sometimes felt to be a mystery.

How then does discourse in words and propositions, linguistic discourse, differ from other works of human art? As heard, or as created, or as read, it is clearly external and sensuous. Its recognizable form no more lays claim to truth or significance than a forest or a pool, an arm or a leg, a piece of music or a statue. Is there some strange secret by which grammar and syntax make sounds into meanings, so that linguistic forms are, as plastic or musical forms are not, claims on reality in general and claims to truth about realities not themselves? Or shall we go even further and suppose that the analysis of syntactical form and grammatical parts is the analysis of everything else? This last absurdity we do attempt, and the world has been thought to be made of grammatical subjects and predicates held together by their linguistic connectives and modifiers.

If truth is literally to be called prepositional in its nature, then at the best truth is a logical relation or network of relations among terms in discourse, or we are asserting that these discursive relations, which are native to language, also apply directly—we might almost say operate—between judgments and minds, between judgments and their formal structure, between judgments and experience, and between judgments and the reality to which they refer. Or perhaps we may put it that the complex and many-termed relation that makes a judgment true is the prepositional network of which the terms are mind, judgment, logical form, experience, and the problematic ultimate reality. But two of these terms are existents, one of them is a specific psychological act, one of them is a pure logical form, and one of them is what I should call a datum.

Whether this is a correct statement or not of the nature of truth, it is at any rate a very difficult conception to grasp. For if prepositional means anything as a description of the nature of truth, all these relations, being alike prepositional, are homogeneous in their nature. Yet it would seem clear that even if some of the terms involved are such as could conceivably be joined in one species of relation, the nature of which is either discursive or strictly logical, others are not. To speak of the

prepositional nature of truth would thus be to assert that this manifold relation is not a genuine relation at all, since by definition it is throughout of one specific character, namely, prepositional, but also, since it holds among various types of terms, it is of more than one logical character or even non-logical. If so, here is another way of indicating the inaccessibility of truth by its very nature, whether discursive or not, a nature inaccessible to mind because impossible for a mind to entertain. Since we all admit the relations that Mr. Loewenberg named in his four prepositions, not only as familiar to us, but as propounded in the historical theories of truth, his paper has made my point in advance. But since Mr. Dennes's may very well be taken to have refuted it in advance, let me proceed.

Even the most rationalistic rationalist, Leibniz himself, found a special sort of active force needed to give significance to linguistic forms. Though the basic logical truths were for him the native possession of minds, they were still not mind as such. Perception and appetition are not themselves his two great laws of Contradiction and Sufficient Reason; those actual forces only operate in accordance with these laws, which are recognized as independently valid, as binding on God as on man. Reality even for Leibniz was more than words or logic, and only inadequately given in discursive form, even though the form of a proposition was identically the form or nature, but not the reality, of substance, which expresses itself both actually and discursively, its discourse describing correctly its being but not constituting the whole of that being, nor even being part of its essential nature. God's own creative power was not his understanding, nor was even his understanding in discursive form; it was at the very best the field of his active power. At its roots discourse is existential; its nature is peculiar to itself, and its forms are not demonstrably identical numerically with those of the reality it expresses. Its truth is of course supposed to be manifest in the consistency and order that it exhibits, but even for Leibniz the truth of human discourse is after all partial, and we may add that these parts of it are not wholly true,

since we finite monads, who mirror the universe, somehow cannot quite attain clarity. The mirrors remain a little clouded; if we are rational, we are not completely so.

On any less rigorously rationalistic view discourse is still further from the nature of the reality that it is said to express or to attempt to express. The absolutely single truth that the universe is one must in discourse be three or four, not one, a relational construct, not a basic identity; and if reality is real, saying so in linguistic form misrepresents that undivided non-discursive reality, though not the judgment, which it fully and accurately gives form to, and which often comes into being only in such discursive, linguistic actuality. These are commonplaces—their significance for Mr. Bradley's skepticism is familiar. But their full force is not always realized. To suppose that discourse could be true in the sense in which Aquinas seems to have thought it true is to deny its specific existential character. To think that discourse bears the index of its own truth on its face, as Spinoza thought it did, is no longer even possible.

Thus the nature of discourse seems to preclude certainty of its truth. And for examples of this lack of certain truth we need only to turn to the conclusions of philosophy, or of science. Here, however, no one, I think, claims certain knowledge of the truth. Its inaccessibility is generally admitted. We no longer expect to demonstrate either philosophical theories or scientific ones. Not only do we not think it necessary for the salvation of man that certain truths should be made known to him by divine revelation, as the *Summa Theologica* puts it, but we do not expect even the lesser truths of science or philosophy to be absolutely established by human reason. We only verify them, as we say. We find that if we believe them and act upon these beliefs, we are sometimes, perhaps regularly, not disappointed in the consequences.

But how different in nature or how far away are these theories from the simple cases where we do claim certainty? Their distance is usually measured by the work of a scientist

or a philosopher who has to his credit discerned them. And this distance is laid out in a record of observations and a series of logical inferences. Just how we get from observed data to any generalization no one knows. The process is called induction; but in the case of the most famous inductions in the history of thought we call the process the intuition of genius; in less extraordinary cases it at least depends on intuitive induction. In any case the logic of induction is defended on the basis of its results and its verification, never on the basis of strict validity. For there have been only too many critics to point out the hiatus between any set of observations whatever, no matter how complete or how carefully made, and the least generalization. In a comprehensive generalization like that of Copernicus the leap of intuition is so great that we wonder rather at Bruno's depth of conviction than at the doubts of his contemporaries. But the passage in thought from all examined instances to all instances is no more valid than from one instance to all, and many inductions, including those that are the actual basis of deductive logic itself, and of mathematics, are made from one instance, from which, as we say, the universal is read off. To use Mr. W. E. Johnson's example (*Logic*, Part II, p. 31):

> We might infer, with a sense of validity, from the information 'Some Mongolians are Europeans' and from this datum *alone,* the conclusion 'Some Europeans are Mongols.' We next proceed . . . . to the generalization that the inference from 'Some M is P' to 'Some P is M' is always valid. Finally . . . . we are led to the conclusion that it is the relation of 'inverse particular affirmatives' that renders the inference from 'Some M is P' to 'Some P is M' valid.

But it is such principles as this latter, themselves the results of intuitive induction, that make up the rest of our basis in logic for all inferences through implicative connections. The same holds of the most elaborate deductions and of all that is ever called valid in the most inspired systems or generalizations, from Thales to Whitehead, from Democritus to Einstein.

My next point has been made so clearly by Mr. Dewey that I shall refer to him instead of arguing it. In "Reconstruction

in Philosophy'' he shows us that explanation in terms of final cause satisfies us so long as we take for granted and believe in final causes; that absolutely true statements are absolutely true only if we believe in a realm of absolute truth. And the same holds, I think, of deductive reasoning and of implication itself. Formal logic is not only based on inductive intuition, but, as Mr. Dewey's argument seems to me to show, its validity once seen is taken as absolutely valid only by those of us who believe in a realm of absolute validity beforehand and never think of doubting it afterwards.

The fictitious nature, or rather the faith-grounded nature, of the validity of implication as the guarantee of inference can be exhibited in another way, which may be more convincing to those who do not find Mr. Dewey's reasoning here satisfactory. And fortunately this second way of exhibiting the lack of finality in deductive reasoning is particularly suited to the non-Pragmatic mind, the mind that follows Mr. Russell with more pleasure and more sense of sureness. It is simply the significance, not too seriously considered even if admitted, of the so-called paradox of implication. This paradox comes to a head in the statements that a false proposition implies any proposition and that a true proposition is implied by any proposition. Or, as it may be more cautiously phrased, and more plausibly, if a false proposition is true, any proposition is true; if *any* proposition is true, a true proposition is true.

If I am not now reading this paper, I am insane. If you are not now sitting where you are in this room, I give up. Or, if two and three are seventeen, I can't add—no one can add. All these are cases of implication, if you take it to be a sound statement that when *a* is true, *a or b* is true. If it is true that in this room the light is now on, it is also true that the light in this room is now either on or off. But if this is so, namely that the light is now either on or off, then, *if* it is on, it is not off. But it is equally true that *if* it is off, it is not now on. This last is true just now, with the light on. If the light is not now on, it is off. And if the light is off, I can not be reading by it. And

if I am not reading by this light, I am certainly out of my head. Perhaps you would be tempted to go further and make the inference suggested. But in that case I might also infer that you were not here, that I am not here, and that wherever you are you agree perfectly.

If you follow Mr. Russell, or almost any of the professionally mathematical logicians, you do admit the presence of implication here, though you do not make the inference in given cases, for the reason that your instincts prevent. The light is at this moment on, and what would be implied by the statement that it is not at this moment on, is of no interest to you—though it might very well be. For, if what is so were not so, there would be no point at all in discussing implication or inference or the nature of truth. And this is only one side of the matter. The other is more to our purpose. It is exemplified in the assertion that if it rained last night we are here tonight, or if it was pleasant last night we are here tonight, or if it is dark outside we are inside where it is light. The implication is there plain enough, though it is not by any inference based upon it that we assert our presence in this lighted room.

But we do not exhaust the significance of the paradox of implication when we notice that the explanation of our not drawing the multifarious inferences it would seem to allow is that that would involve contradicting the ground of the premiss or inferring what we already know. Contradicting premisses is a favorite method of demonstration in geometry and in logic, and if implication were our sole ground for inference, the conclusion of a dilemma or of a so-called reduction to absurdity would not be a necessary conclusion at all. But to return to the paradox of implication and what seems to me its greatest significance.

If, given the truth of the proposition p we can always validly infer the alternative p *or* q, and if by direct intuitive induction, the assertion of the alternative p *or* q together with the denial of p amounts to the assertion of q, then also it is intuitively and directly apparent to any mind that the denial

of p when p is immediately apparent or otherwise guaranteed—namely the assertion of what we take to be false—implies any proposition you choose, as has been fully enough illustrated. Sane persons do not in such manifest ways contradict themselves. But to avoid contradicting oneself here does not at all require that one give up the obvious presence of the implication. In other words, a false proposition does imply any proposition, and by equally simple reasoning, a true proposition is implied by any proposition. My point is that it is not implication that grounds derivative inferential conclusions, but intuition of what logicians call truth, whether that of the most elaborate theory or that of the most obvious statement of fact, whether at the beginning or at the end of a reasoning process. Our faith in statements, in knowledge in general, is grounded at the top as at the bottom in direct intuition. Truth is as accessible or as inaccessible here as there. Inference is a psychological act with no better grounding than our sense for reality, and the real use that we can make of our conclusions.

It will at once be answered that in the paradox of implication we are saved not by a sense for reality but by the primary logical principles of non-contradiction or of avoiding circularity. But it seems clear enough that what establishes these rules and makes them sound guides in thinking is just the sense for reality itself. Of reality we postulate non-contradiction because of our feeling for it. Our experience of it seems well expressed only in such discourse as obeys this rule. And the avoidance of circularity in argument, as in all particular cases in argument, is based on the simple fact that the purpose of thinking, as of any other activity, is not to get what we already have, but something else. The two canons of logic are good just by virtue of formulating fruitful procedure in our own world. The sense for reality is our present or our ultimate guide here as elsewhere.

Since the most elaborate and accurate reasoning, scientific or philosophical, claims no other ground than implicative relations, except just its data, we seem thus to have found a second way of exhibiting the lack of absolute logical validity in the

nerve of all argument. As Santayana puts it, essences are never in themselves related by implication. The only ground left for faith in these relations is that on which we believe in the simplest present facts of experience.

But in these very illustrations I have been using the terms *true* and *false* of propositions, when these were direct and almost instantaneous recordings of data in intuitively certain judgments. So that in attempting to invalidate the certainty of all derivative conclusions, which involves the inaccessibility of their truth, I may seem to have been re-asserting not merely the certainty of immediately had experience, but also of the judgments given on the spot, of which we seem thus to recognize the truth or falsity at once. In other words, even if I have shown the inaccessibility of truth for all cases of knowledge that claim validity as inferences resting on rigorously defined and clearly present implication, I have done so at the expense of admitting our certainty of the truth or falsity of these simple immediate judgments.

But such immediate experiences have been taken care of for me by so many philosophers that if they were all I had left to dispose of, I should have finished already—with a reference to any one of a dozen contemporary thinkers. That is to say, if these so-called judgments simply express acquaintance with data, the question of their truth or falsity does not arise. Just so far as judgment enters at all in such supposed certainties, so far are they uncertain, for then they are taken to refer to something beyond data; if they do not so refer, they cannot even be judgments. Hence they cannot be cases of true judgment.

A different view, however, turns our attention to perceptual judgment. But I cannot depend upon perception without the aid of a dubious memory except just while I am perceiving, and later judgment, usually called knowledge, and certainly a good example of discursive knowledge, if there is any such thing at all, fails of certainty. If I can carry away any knowledge with me when I leave the room, then the certainty I remember to have recognized in it a few moments before is no longer present

unless I trust for certainty to memory. That I do trust memory and so have faith in my beliefs cannot be said to be more than my possession of such faith. I hope I know, but I never know that I know any but spot-knowledge, so to speak; my credit is not good, my account is not certified on my check, the truth of my knowledge remains inaccessible.

The criticism that unless we are acquainted with truth in at least some instances, we cannot recognize it anywhere nor know what we mean by the denial of its presence, would perhaps hold, were truth a determinate perceptible quality like red or soft. But truth names a relational status, not a quality. We can know what we mean by it as in the case of other relations, where we name them in symbols, suggest them in diagrams, and intuit them directly as the discursive or logical structure of a datum, without at all knowing whether the relations so intuited hold among substantial terms, and without having any substantial instances of them. Indeed those thinkers who claim knowledge of truth on the ground that we must have instances of it in order to know even what the word means are on this point in agreement with those philosophers who claimed to know truth in knowing the absolute truth, that is to say, God Himself, who *is* the truth. How, they ask, can we mean anything by goodness at all unless we know absolute goodness, or truth unless we know absolute truth? And there is only one absolute truth. If we may believe them, they were even more certain of their knowledge of God, and the truth which He is, than of any facts of perception at all. It is not that they claimed to know all truth, but that they based their claim to a knowledge of its nature on some few absolutely true judgments, and these were characteristically that God is Perfection or that God is Truth.

But there is a further difficulty in admitting any case whatever of the accessibility of truth as certified by its own nature. If we recognize the truth by having possessed or by possessing cases of it where its specific relational character is evident to us, how can we fall into error? Truth, if it is its own index, is also the index of the false. It seems incredible that serious scholars

and scientists should, if they recognize the nature of truth anywhere in actual cases, also recognize it where it is not. We might of course work out a problem and come to a false conclusion. But how, if we recognize truth as such when it is present, do we ever come to *assert* a conclusion which is not of this recognizable nature? How do we actually come to assert the presence of truth so often where, as it turns out, we did not find it?

My friend may be six feet or so tall, as judged by my own sight of him beside a measuring rod. But I should not be likely to take this statement as absolutely true, were the limit of height for admission to grace exactly six feet, without repeating my measuring and testing my measuring rod. Any correction is based on perception and judgments of perception. But we never do seem to reach the point of such certainty as needs no further testing. Or, if we do, it is because our judgments have given up any claim to such specific definiteness as could be applicable to any fact. They do not so much fail of truth as of meaning. That is, they have no perfectly determinate meaning in themselves, and the assertion of them is in no danger of being found false, because there is no specific sense in which it could be true. We may agree verbally very easily when we can be sure that our discourse does not refer to any precise determination in reality. And I take it that the height of a man is absolutely determinate. If we may go on the assumption that there are no real cases of facts that are not exactly what they are, there are no real cases of approximate heights. Discourse as applicable always fails to be determinate enough to be either true *or* false. Mr. Russell's cure—the prescription of symbolic logic as the only medium for useful philosophical discussion—would be satisfactory; on the condition, however, that philosophers were willing to give up all direct significance for a pure realm of abstraction. Mr. Moore's compromise loses the sweet reasonableness of our vaguely indeterminate but living human speech without, however, making the austere renunciation of substantial reference that achieves the absoluteness of mathe-

matics. Language is thus perverted into an ugly form of pseudomathematical scholasticism in the attempt to accomplish what mathematics itself has renounced as clearly impossible.

In direct perceptual judgments we do of course agree on standards and on precautions, on definitions and witnesses, our own supposedly infallible perception seeking always the certainty that it was supposed to possess in its own right. And this for practical purposes will do. But the fact of honest error even after the exertion of great pains seems to indicate that if we believe in certainty at all, we do now and then find truth where it is not present. As Descartes, who took certainty for his one aim, erred in his very first conclusion, so in his theory of error he went further and showed that he could not so have erred. Some men have even seen God.

There may be no possible proof that we do not see what we take ourselves to be seeing. But if it is green grass where some one else sees gray or black, it is always possible, and I should say reasonable in theory, even if not in practice or in legal evidence, to admit doubt. In the first place the actual grass may be neither green nor black, and if we are only asserting that reality manifests green to us, it seems difficult to make this a judgment without adding *here and now* or *there and then*. If the greenness is not so placed its assertion reduces to the statement, "I perceive green," at the moment of utterance, or rather, since the *I* is not a very clear term "green in perception now," and since perception is also unclear, "green now." This is, I think, an example of such primitive judgments as are the basis of all discourse. But all further development involves further uncertainty, and I can always be brought to doubt even my own having of data, either by not finding a confirming witness—as when it is the flash from a lighthouse across the bay that I think I discern—or by never perceiving another flash. Whether perception is all in flashes or in actual continuous duration I do not know, but I am not sure that either alternative has been established. If you cannot prove that I am in error about the flash of light, even I myself can doubt that I speak the truth,

and certainty (the accessibility of truth, that is), is the impossibility of doubt, not the lack of a proof of error.

Greenness in its variations from one shade to another may serve as one last obvious certainty that turns quickly into doubt. Of three shades of green very close together, exhibited in three spots of color before our eyes, we may see that shade number 1 is the same shade as number 2, and shade number 2 the same as shade number 3, and yet that shade number 1 is not the same as shade number 3. We end by taking not the perceived identity of 1 and 2 or of 2 and 3 as certain, but, relying on our sense for reality, we judge that the three are minutely differing shades, the variation from one to the next not being perceptible but asserted nevertheless, and contradicting perceptual judgment.

If we give up perceptual judgment as certainty we have left only the indubitable datum itself. Here, if there is to be true judgment, the truth must be directly present upon the datum, and if this is truth, then the having of data constitutes knowledge and judgment. But knowledge is never thus immanent. It has, as Santayana says, both relevance and transitiveness, the second necessary to the first, but ruling out the possibility of certainty. In any theory of knowledge as immanent this relevance is annulled. Such a theory substitutes identity for reference and turns knowledge into its supposed object. Either the object is no longer real but only a discursive term, or else the knowledge is no longer discursive judgment but substantial reality itself; and it is not the substantial reality of the process of knowing but that of the substance or process or actually established relation that the judgment was to refer to in order to be knowledge of anything at all. An immanent theory of knowledge ends in mysticism, and mysticism denies validity to every discursive judgment.

If we did possess derivative truth, if truth were anywhere accessible to human minds, then I take it that perception would be its basis. But since I am trying to show that truth is in *all*

cases *in*accessible, the justification of this statement is not my present concern.

Data, while they make up the content of discursive judgment, are not its existence, which is a process, an activity. And they cannot be either true or false. Of perceptual judgment we seem to be able always to doubt the truth. And of judgments not so close to their objects in time the dubiousness is clearer still. Judgment itself takes time, and retained knowledge in discursive form is open to the doubt incident to any remembered knowledge. Time is itself only a postulate, and memory is only the instinctively trusted witness of its passage and of past events.

But the truths of history have long been admitted to be inaccessible, and my problem is with such examples as I gave at the beginning, which may still seem not doubtful even after this argument. We all know that the great war began in 1914. We all know that Newton formulated *a* law of gravitation. Some of us even know that Shakespeare wrote his own plays, and all of us know that we have feelings of our own, as all of us know that architecture is not poetry, or at least that Wheeler Hall is neither *The Chambered Nautilus* nor *Paradise Regained*, and all of us recognize the truth of the statement that prices fluctuate, almost as inevitably as we recognize the correctness of the additions on our monthly bills or that of the subtractions on our bank statements. If I have exhibited the inaccessibility of a few difficult and admittedly doubtful truths, and if I have reminded you of the absence of truth from the mere having of data, I have still a list of truths that seem only too accessible, such as that I am still far from the end of my paper and that it is much later in the evening than it was when I began.

The rest of my argument will take less time, however, than you may suppose; for there are needed only two considerations to finish it out. One of these is the large part that definition itself plays in our assurance about our knowledge, though it is obvious that definition is not truth. The other involves the confusion already noticed between the having of data and the pos-

session of either truth or knowledge, abetted by an articulated theory of knowledge as thus immanent. It is the combination of definitions with this confusion, as I think, that accounts for our failing to see the real dubiousness of such examples of apparently certain knowledge as I have suggested.

That Shakespeare wrote his own plays is certain, only so long as "his own plays" means the plays that Shakespeare wrote. But in that case the judgment is insignificant. No Baconian would care to doubt it, though some Baconians would still doubt that it is Shakespeare we are quoting when we "doubt truth to be a liar." If purely verbal judgments were true, then truth would be accessible. But in the first place they are admitted to be non-significant and therefore not even possibly true. Verbal judgments that are useful are most often definitions, not assertions at all, and not to be mistaken for assertions. In mathematics that is all that we require. We agree with each other or with our bank on the correctness of additions and subtractions because we have found a set of specially clear ideas and symbols on which we have agreed to agree. Two and two make four, if not, as Kant pointed out, by the definition of *two* and of *and,* then by the definition of four and the definition of number. The prime numbers are defined as only certain integers among the rest. Consequently we can know by definition that they are not all the others. The processes of mathematical demonstration are in the end and essentially substitutions, where the definitions and agreements on postulates or axioms tell us what can be substituted for what. In other words, all mathematics, like all logic, is bi-verbal definition, or what we may call its opposite; it is either the substitution of familiar symbols for other symbols, or the substitution of unfamiliar for familiar ones, too inconvenient to write out. And at its foundation it is such ostensive definition as points out the notions to which it confines all of its transformations. It therefore points not to any known truth or even —as at least some mathematicians seem to assume—to any intuited content at all, but only to symbols again, which, if they

are *not* intuited meanings, are not only the so-called indefinables involved, but altogether meaningless.

But mathematics is a sort of knowledge which we are gradually realizing is not knowledge of the truth. It is only acquaintance, and it is not necessarily acquaintance with the qualities or properties of things, but with the natures that we have immediately present to mind as data, non-existent logical data, unchanging, strictly static meanings or forms. Existence is predicable only of what is in change. Meanings, if they change, are forfeited. But, I may be reminded, thinking itself is not static. And I should agree. All I wish to insist on is that the content of discursive judgment as such is static, and hence that the truth of discursive judgment is impossible, if such judgment is supposed to be the expression of the living nature of things. The relation of knowing to the rest of the real is the relation of a part to a whole in which it operates, and truth as an adjective of judgment is only too likely to introduce a confusion as to the very aim of knowledge.

If it is not knowledge but truth that is said to be the dynamic interaction of transformations in mind with transformations in things, I have still to demur. For either one transformation has the form of the other and characterizes that other, and may even be given as the discursive expression of that other, which it means, or else none of the meaning of the word truth is given in this definition. If truth itself can change; if we are not to hold with the formula "Once true, always true," then all logic falls to the ground not merely as invalid but as useless. If truth itself can change, it is not the truth about anything, because it is itself not anything; it has lost all meaning. It is this that keeps me from admitting Mr. McKay's definition as applicable to the truth, though I think that his definition fits something more important, namely knowledge. For truth some sort of correspondence is required. Any interaction would thus be of the sort that it is, with its own form or meaning, and the truth would be the correspondence between two forms. What seems to me important about interactions between processes in

mind and other processes is their working into each other actively and successfully, though they may be of widely differing kinds of form, with no possible correspondence of the sort that could be called truth. If the suggested definition intends no such correspondence of two static logical forms, then it does not touch the meaning of truth. If truth is an event, that is, it is real and not what we mean by true. If it is an interaction, it is only an event. If the form of the interaction is what is true, then it is so by expressing in one medium, usually linguistic, the same form that is also in another medium, and its truth can not be immediately apparent, nor ever actually found. Truth then remains inaccessible.

The answer will be repeated that knowledge is a process, and thinking an activity. But this seems to me not to touch the issue. That is, thinking works its way along in and toward other parts of the real world, transforming as it goes, and as science, measuring as it goes, using graduated beakers, calipers, dials, pointers. And as the typist could not tell you while he is at work what his key-board looks like, though he may be using his eyes to find the keys, so the expert is not engrossed in the look of his own hands, nor does he look at a dial and see its shape and color. There seem to be no data involved at all. In perfect functioning, if there is any, we discriminate directly and without images or discursive content—as ants or bees do, I suppose, or as our own sophisticated glands do. We are functioning organs, thinking with our whole selves; we have no aesthetic experience; we are busy knowing, finding our way home or our way out, like rats, or body fluids on their expert way to excretion. This is intelligent active thinking and knowing. In this sense if we were a tenth as intelligent as our own lungs or kidneys what chemists we should be! But even laboratory experts do still claim knowledge when they have left their laboratories, differing thus from escaped rats or bodily effluvia. They go so far as to write it down, and to publish what they call their results in discursive accounts. And it is only of such knowledge as this that truth could be predicated. Intelligent thinking,

working knowledge, successful activity—all this may be the ideal of human functioning. But we are still in the semi-aesthetic stage, where we speak of knowledge as a possession sometimes capable of being viewed or heard in discourse; and it is only such knowledge that could be either true or false. Unimpeded action, successful action, these remain action. The capacity for such action is called having a good mind, the performing of it is called knowledge of how to do things, and it is all-important. But it has nothing to do with truth, though there are very good grounds for saying that it is above and beyond the need for truth, and in no sense inferior to discursive knowledge with content of an aesthetic nature such as words or sentences may present. In any case, in the Pragmatic account of truth, truth remains as clearly inaccessible as in the case of any judgment dependent on memory, as all judgments are, of course, and real time has been postulated, taken for granted and properly to be admitted as so taken.

But to say that Pragmatism has not defined truth in defining knowledge, or to say that much of what we call truth, and find accessible, depends merely on definition and is largely verbal, does not dispose of the rest of my examples completely. If the case has been made out for historical truths and for derivative truths, how do we still know that Newton formulated the law of gravitation and that that law holds within a certain range of phenomena? Largely, I think, on the slipperiest of grounds, namely hearsay. But it is not hearsay that makes us certain of our statement that poetry is not architecture; *that* we can be sure of by accepted definitions. What any one could get us to call a building must fail to be what we call a poem. But even this is doubtful unless we stick to narrow definitions, which, however, we must do. For broad enough definitions will allow any judgment to be true, and correspondingly useless, though on an immanent theory of knowledge, the broader the definition the better; and it is characteristically adherents of this view of knowledge who find the greatest truths of all accessible.

I shall not attempt to argue this point. But I will offer two examples that seem to me fair. In the broad meaning of the word *poetry*, architecture is poetry because all art is poetry. But also all art is the dance, as Havelock Ellis has reminded us, and so is all life—our partner, I take it, being the rest of the world. But we may take a more typical example. In everything that comes into experience I recognize the real, and my judgments are to be taken as true because the consciousness of the direct presence of reality is the truth itself. As we are consciously alive, so we possess truth. And it is the very insistence on narrow definitions, so-called literal meanings, the attempt at rigorous articulation and the notion that thinking is abstraction, logical atomism, in fact, that mislead us into skepticism. Now we may find excitement and stimulation in thinking of reality itself, as we may look at the sun to vitalize our brains—and become blind. Or finding all reality a better subject for thinking than any particular thing and its ways of working, we may turn to the reality of the sun because nothing else is brightly enough illuminated. When we can have light itself at its source, why should we be content with less? But this would seem to most of us something of a confusion of aims, since the only things to be seen by sunlight are those on which the sun shines. When we turn our gaze upon the sun we are looking in the one direction that is opposite to every illuminated object. Having the sun before us does not give us light on things, and metaphysicians as such are not likely to advance the cause of knowledge. For the presence of the sun of reality to our eyes is not knowledge even of the sun. It is only having data.

Such knowledge as that of the fluctuation of prices is in part the having of definitions. For the rest it is sheer faith in many kinds of specific realities, exchanges, stocks, bonds, commodities. If we really knew the truth of the statement that prices fluctuate, there seems to be no reason why we should not perfectly inconsistent and therefore by definition in some cases come to know the truth—the certain truth—of half a dozen false theories of economic value.

Of the future there is no certain knowledge, no truth accessible. Of the past there is no certain knowledge. The present gives us acquaintance with data, but this does not constitute significant knowledge; and in judgments of perception in which the judgment is made while the data are still present there still enters an element of doubt, which increases with time. Moreover the data which are taken to be characters of moving events are both made static in meanings of logical form and also taken on faith in memory. Judgments upon them furthermore involve the uncertainty incident to a belief in real time.

It remains to be noticed that theories do work. It is also to be repeated that the time elapsing between the occurrence to mind of data and the formulating of judgments upon them, especially judgments as to their spatial or temporal relations as perceived, is too short to allow room for serious doubt. But I do not wish to deny either of these assertions. Our faith is strong in memory, and we believe heartily in the real passage of time, and in real change. But the working of a theory is its usefulness and applicableness, not its truth disclosed to view. We believe too that data manifest actual realities, desired or dangerous. If we had not so believed at various times in our lives we should not be here, I suppose, to come across other data. We are existences among other existent things. We adapt ourselves to our world. We believe because we are alive and conscious, exactly, I suppose, as a dog believes in a path or a bird in a direction in the air. But the dog's bark as he runs ahead into the path is not his possession of the truth of a judgment. Nor does the bird know the truth of some such statement as that he is flying south. And *we* do not certainly know the truth of such statements either. They are our way of barking or of soaring. When we bark appropriately, it is a sign of existential fitness, and our statements express such faith as comes of intelligence in intimacy. Whether they are true or not we never could know. If we soar on philosophic wings we fail even to keep our direction; much less do we judge certainly that it is toward the pole of truth.

I have now dealt with all of my examples, not of course to the satisfaction of any one who is not willing to fill in the details. But I think that details are all that is lacking, the presentation, that is, of more concrete content to keep the mind longer on the situation we are in when we claim certainty for knowledge.

What I have left to do is to indicate the great importance of belief and the genuineness of grounds for it, grounds which do not guarantee its truth but which make it important knowledge. To hold that truth is inaccessible is not to deny meaning even to the term absolute truth; much less to fail of a criterion for preferring one belief to another to the point of surrendering self-respect in surrendering preference. Galileo suffered—Mr. Whitehead suggests that it was only mildly—the humiliation of arguing his beliefs with ecclesiastics who should have been his pupils, of doing this for years under compulsion, and finally of recanting on perfectly irrelevant grounds. But Galileo could not demonstrate the truth of his theories. I suppose that we should say that they were not in the first place true, including as they did the naïve belief, taken over by Descartes and Locke, in the bifurcation of nature lately so deplored. But if they *had* been true, Galileo could not have known that with certainty, as I think I have sufficiently shown in the case of all formulations of observed data and all derivative scientific inferential conclusions. How then can we say that his grounds for belief were better than the religious grounds of his oppressors? If truth is inaccessible always, is not one belief as good as another?

I am particularly anxious to suggest that this is not the case, because my thesis as to the inaccessibility of truth seems to fit in so well with what I think a vicious tendency in present thought. We seem to be losing our belief in science itself, our solidest and most painfully acquired knowledge, as well as in democracy and justice and representative government. We set almost as much store by loose speculations on relativity and its bearings on religion as by Einstein and his most competent interpreters. But which are these? If none of them surely has

the truth, if truth is in its very nature inaccessible, what criterion have we by which to judge between varying interpretations? Or what ground is there for having more faith in the advice and the theories of the economists than in the utterances of politicians?

My grounds here, so far as I am conscious of them—and of most of them I am not conscious at all, I suppose, lying as they well may in nervous habits and coordinations and in the biological and social heritage that is so large a part of any mind or body—my grounds so far as I recognize them are not very different from those on which I would defend mine or another's taste in art. We have competent art critics, whose judgments are sometimes significant, as often, in fact, as they are governed by intimacy with many beauties, the sense of beauty having thus been cultivated in them. And they are significant to us as we ourselves are governed by this same sense and have enough in common with the critic in endowment and training to interpret his discourse, and enough material at hand to apply it. In matters of taste we do not pretend to truth in judgments. And of others we ask only the enlightening suggestion or the expert analysis of a mind whose discourse we can feel to be significant and to exhibit competence. When discourse pretends to be applicable to eventual actualities, our tests are more thorough and more elaborate, but they are of the same relative sort. We feel the sense for reality, as Mr. Taylor does in Aquinas, in the authority we consult. But more than this, we use the test of existential relations, which cannot guarantee the truth, but only the weight or significance of judgments. In matters of aesthetic taste verification usually follows immediately or not at all, and even without it we survive. In matters of fact or of logical principles we consult our race and its theoretical achievements in science and philosophy. And we have no doubt been stirred more or less by an ideal of the inaccessible truth, the definition of which it not difficult to formulate. A judgment is true if in the medium of discourse it expresses the actual constitution or character of anything which it also clearly indicates as that

to which it refers. Particular judgments approximate such expression from limited points of view at particular times, and they may, with these limitations, be roughly true. But even *their* truth is inaccessible to us, since on the grounds I have given we cannot be absolutely sure of it. *The* Truth would mean that construction in discourse that should express or describe all reality from all points of view, and this whole truth could not belong to any human judgment.

Our *belief* in particular judgments is strengthened if the judgments, as applied in practice, work. But much of practice is thinking, a sort of practice that we employ when other sorts fail to satisfy us, whether in such specific thwartings as Mr. Dewey emphasizes, or in those very common situations in which we simply have a vague sense of not living quite fully or satisfactorily. Our practice runs smoothly enough, but it brings us no great joy. And we may, like Spinoza, seek philosophy to teach us the real happiness of man. But we shall not so find the truth. What we may find is a better way of thought. And again we come to the lacking criterion of the better. Mr. Schiller tells us that it is survival, and that such survival also *constitutes* the truth. If, however, we have a more traditional dictionary than a humanistic lexicon to consult, we shall think that the survival is due to the degree to which the judgment approximates ideal truth. To test this approximation we simply have to go on living in the world and experiencing it. We practice direct intuition and apply our judgments to our own experience and to other men's discourse. Our experience refuses to let us doubt that the light was really on a moment ago and has been on continuously since. And we trust experience because we are natural creatures in the world, whose discourse is one form of mutual adaptation to our common surroundings. We have learned to trust nature and one another in surviving at all. The whole process is social in the same sense in which it is natural, and in no other, I think.

Hence we find significant judgments in Plato and Aristotle, in Augustine and Aquinas, in Hobbes and Rousseau. But we

never certainly find truths there. Our nearest approach to them is in our own private experience of our feelings; for which, however, discourse is so inadequate that we cannot often know how we feel but only be acquainted with our feelings, only go on feeling, that is. Santayana has said that there are no literal spiritual truths. If there are factual ones, even here we can not know surely that they are true, and hence must in all cases admit the inaccessibility of their trueness.

This sense for reality is no sixth or sixteenth new sense, but just the necessarily inarticulate feeling of existence in and about us. We may call it our own intuition of reality, which may get expressed indirectly in judgments in discourse. But happily we are social beings and can trust other men and their intuitions, first by our feeling for their sense of reality, on which most of our confidence does rest, I suppose, but secondly by our specific competence, our degree of intimacy both with the subject matter, the data, sensuous and logical, that their discourse presents, and with the methods they use.

In case this be thought a vague or nebulous substitute for the tests of truth usually given, I may add that it of course includes all of them, without, however, admitting that they are ever absolute. That, I take it, I have already made out at length. Let me then expand a little the application of this criterion to the issue already suggested.

It is becoming more or less the vogue among scientists and philosophers to express a loss of faith in science and philosophy. And their present ground seems to be the popular and very vague notion of the way in which the theory of relativity not only upsets some particular formulations in physics, but exhibits the unsoundness of science. Scientists who become infected with this notion, are likely to turn to philosophy, for which they have even less respect than for their supposedly discredited science itself. And philosophers, with various hopes, turn to the same sort of notion of the instability of science, to dream out these hopes in metaphysical, or merely verbal, speculations, with a new freedom.

Now all this seems to me an unwise, not to say a foolish procedure. I am less informed than I should be as to the modern developments of mathematics and physics, and being properly acquainted with these developments seems to me of the first importance. But if they were as upsetting as the most unscrupulous magazine article makes them, my criterion of soundness in belief would not be shaken. This is largely because the criterion itself is not the supposed possession in any case, no matter how simple, of any such truth as is its own index and the index of the false. Once we are clear as to the inaccessibility of truth, we turn to any investigation of beliefs with a standard more difficult to apply, since it is an actual one and not merely a mistakenly accepted impossibility, clearly named, but only precariously held or applied, because it is not really clear itself or else is misrepresented in a speciously clear doctrine. But if the standard is difficult to apply, it is one that cannot be lost, even if it could be absolutely *demonstrated* that no human statement is ever true; and it is certainly not lost when we find the doubtfulness of some proposition in well established theory that has been mistaken for certain truth.

As in moral theory some men claim to know the right absolutely and fail always to convince us because their right sooner or later turns out to have been wrong on grounds they had not considered, so in science and philosophy. Men have insisted that at some point or other they have access to truth. Then their truth turns out not necessarily or even probably true. Instead of realizing that what they took for truth was error or inadequacy, and that they are simply forced to the denial of the accessibility of truth, which does *not* leave faith groundless, they feel that there is *no* solid ground for judgment and that there is therefore no reliable knowledge. If, however, knowledge is only irresistible intuition or grounded faith, and if all knowledge has always been only this, their disillusionment and their skepticism are sophomoric. James and Pragmatism have done most, I suppose, to make this clear. But the Pragmatic tests allow a freedom that seems to me unwarranted, and

they are not tests of truth, but of knowledge. I see no good in denying the old sense of the word truth, nor any full justification for calling truth verification or survival-value. Discourse may even do well to try to approximate the old ideal if that really stimulates it. But we need not go so far as to assert that we could ever achieve truth, except in a loose popular sense, parallel to that in which substance remains unobjectionable even to Mr. Russell.

On the other hand, once we believe in an independent spatio-temporal world, a nature in constant change, in which we are existentially and completely immersed, it is no miracle that in using our powers to the best of our ability, in adapting ourselves to survive, our discourse should have become part of that adaptation, and hence relevant to our conduct in the physical world, which still remains independent of us for its survival. This is plain naturalism, of course, and its systematic formulation has flaws. If the critics of it had demonstrably true knowledge to substitute for it—as they have not—we should all have to give it up. A more positive reason for adhering to it is its one overwhelming advantage, aside, of course, from the fact that it is the basis of most of most people's thinking in most matters and the basis of all thinking in some matters. This advantage is simply that naturalism claims no certain knowledge whatever. It makes no claim to truth for its own doctrines because it finds that no knowledge is ever certain, that truth is inaccessible, that significant knowledge is tested belief. And the tests it uses are all the tests that have been found in philosophy or science or common sense.

Within such a belief as naturalism there is room for intuition and for ideals, and for the firmest faith in all serious human thinking—most of all for faith in such science as lives up to its traditions, but also for faith in all those ways of thought not so strictly scientific, that have helped to establish not only our logic and our mathematics, but our social and political institutions. And there is room too for such skeptical thinking as in denying the accessibility of truth, doubts the wisdom of neglect-

ing any of those tested intuitive sequences that have resulted in the learning of our day. Such learning cannot survive as living knowledge without fresh intuition and critical thinking. It goes on, like all organic processes, as an irrational existential activity. It must keep on going in order to *be* at all. But its beginnings and conditions are in the past, and if mere natural piety were not enough to make us cherish these conditions of its existence, the least appreciation of our actual dependence on it would suffice. For it is most of the content and form of our own present thought, the very constitution of our habits of mind. Philosophies are all doubtful, history is all doubtful; but happily we cannot so easily doubt the value of a knowledge of either of them, and even the history of philosophy is on such grounds a fruitful study.

What seems to me not particularly fruitful is such thinking as is embodied in my present discussion of the nature of truth; but we cannot all be engaged in the *most* fruitful thinking, nor always even in the most fruitful part of that field where we come nearest to having any competence. And of characteristically *un*fruitful thinking the best examples seem to me not all in modern philosophy, especially so far as that philosophy turns in the direction of naturalism. If I have any sense for reality it directs me to nature and to natural science, to the accessible data of sense and to the traditional principles of logic and method. It never directs me away from nature. Politics and ethics and aesthetics and logic are not independent fields of social or humanistic science, but extensions of natural science; their basis is here or nowhere at all. And while scientific norms are all-important, there are no normative sciences. There are minds, but only as processes in bodies. There is, I hope, significant philosophical speculation; but its results are only natural knowledge, grounded beliefs felt to be of the very last importance, never judgments known to be certainly true.

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